

JPRS-UCR-86-010

4 JUNE 1986

USSR Report

CONSTRUCTION AND RELATED INDUSTRIES

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USSR REPORT
CONSTRUCTION AND RELATED INDUSTRIES

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CONSTRUCTION PLANNING AND ECONOMICS

GOSSTROY STATUTE ON NEW ROLE FOR CONSTRUCTION TRUSTS

Moscow EKONOMIKA STROITELSTVA in Russian No 1 Jan 86, No 2 Feb 86, No 3 Mar 86

[Statute on the Construction-Installation Trust as approved by a Decree of USSR Gosstroy and USSR Gosplan of 11 July 1985]

[No 1, Jan 86 pp 53-57]

[Text] 1. General Provisions

1.1. A construction-installation trust (subsequently called the "trust") is the basic cost-accounting unit for managing construction work and is a unified production-economic complex which, as a rule, includes construction-installation administrations, other organizations equivalent to them, subdivisions for mechanizing the work, administrations for production and technical supply, transport and other subunits depending upon the specific jobs performed by the trust (subsequently termed "production units").

In the instances where the trust is served by specialized organizations for mechanization and transport and which are part of ministries and territorial main administrations for construction, the appropriate subdivisions of these organizations, as a rule, are in operational terms under the trust.

A trust as a general contractor is obliged to coordinate the activities of all parties participating in the construction, and its decisions on questions related to carrying out the approved plans and work schedules are compulsory for all construction participants, regardless of their departmental affiliation.

1.2. A trust, in utilizing state property assigned for its operational management or use, under the leadership of the superior body and with the forces of the trust collective carries out its production activities in accord with the trust's plan for economic and social development on the basis of cost accounting, it carries out the duties entrusted to it, it has rights related to these activities, it has an independent balance sheet, payment and other accounts at banking institutions and is a legal entity.

1.3. The main tasks of a trust are:

The prompt and high-quality fulfillment of the quotas for construction and completing capacity and construction projects and the carrying out of the range of special construction and installation jobs;

A constant rise in construction efficiency on the basis of its intensification, the saving of all types of employed resources and the rapid introduction of scientific and technical achievement;

A systematic rise in labor productivity based upon the introduction and development of a brigade contract and other advanced methods of organizing labor, the greatest possible development of the socialist competition, advanced forms and systems of wages as well as material and moral incentive;

Improving the organization of construction work and the management of construction, planning and cost accounting, and reducing the cost of construction and installation work;

The rational use and greater effectiveness of capital investments allocated for construction, reconstruction, expansion and technical reequipping of the trust's own facilities and the complete utilization of production capacity;

The carrying out of essential measures for environmental conservation;

The establishing of stable labor collectives and their social development.

1.4. A trust is established depending upon its affiliation in accord with the current legislation by a ministry (department) of the USSR as well as by the council of ministers of a Union republic or in a procedure established by it.

The formation of a new trust (production unit) is permitted, as a rule, under the condition that the analogous organizations operating on the given territory have achieved the indicators of the first group in terms of the wages for the management and engineer and technical personnel.

A production unit of a trust is established in accord with the current legislation.

1.5. In the necessary instances, upon a decision of a USSR ministry (department) or a council of ministers of an Union republic, a trust can have under it individual independent enterprises and organizations which have the rights stipulated in the Regulation Governing a Socialist State Production Enterprise (subsequently called "independent enterprises"). A trust which has independent enterprises under it, in relation to them, acts as the superior management body and can centralize completely or partially the fulfillment of individual production and economic functions for the designated independent enterprises. Here a trust through the forces of the production units should carry out at least 50 percent of the annual volume of construction and installation work.

A trust's responsibility in terms of the obligations to the superior body and the independent enterprises subordinate to the trust as well as responsibility of the superior body and the independent enterprises subordinate to the trust in relation to the obligations to the trust occur only in instances provided by the legislation of the USSR or an Union republic or by contract.

The state is not responsible for the obligations of a trust nor is the trust responsible for the obligations of the state.

1.6. A trust has by-laws approved by the superior body.

A trust's by-laws should include:

The name or number of the trust, its location (postal address) and the numbers of the trust's accounts in the banking institution;

The name of the body to which the trust is directly subordinate (the superior body) as well as the name of the ministry (department) of which the trust is part of the system;

The subject and purpose of the trust's activities;

An indication that the trust has charter capital;

An indication that the trust operates on the basis of the current regulation and is a legal entity;

The name of the official heading the trust;

A list of production units comprising the trust with the indication of the location of each of them and if they have accounts in banking institutions, the numbers of these accounts.

The by-laws can also include other provisions not contrary to the law and relating to the particular features of the trust's activities.

A trust assumes the rights and duties related to its operations and is a legal entity from the day of approval of the by-laws.

1.7. The trust exercises the rights of possession, use and disposal of the property under its direct management as well as the right to use the land allocated to it within the limits set by the law and in accord with the aims of the trust's activities, the plan quotas and the purpose of the property.

A trust is responsible according to its obligations for the property assigned to it and against which a claim can be laid according to the USSR and Union republic legislation.

1.8. The production units comprising the trust are not legal entities. The rights and duties of a trust's production unit are determined by the current legislation, by the present regulation and by the regulation governing the given production unit as approved by the trust's manager.

The trust's manager has the right to grant a production unit additional rights within the trust's competence with the exclusion of the rights turned over to a trust by the superior body.

1.9. The procedure for carrying out internal relations within the trust, the consequences of the violation of obligations by the production units as well as the procedure for settling internal disputes in the trust are determined by the trust.

1.10. The assignments and instructions related to the operations of the trust, its production units and independent enterprises under the trust can be issued by superior bodies only to the trust, with the exception of instances provided by the current legislation.

1.11. A trust has an identity document [passport] drawn up in the established procedure.

2. Management of a Trust

2.1. A trust is headed by the trust manager appointed to the position and removed from it in the procedure established by the corresponding USSR ministry (department) or by the council of ministers of a Union republic. The management of a trust is carried out on the basis of a combination of one-man responsibility and collectivism.

2.2. The manager of a trust:

Organizes all the work and bears full responsibility for the trust's operations as a whole, without authorization acts on behalf of the trust, and represents it at enterprises, institutions and organizations on questions related to the trust's operations;

In accord with the current legislation and the present regulation manages the trust's property, concludes economic contracts, opens and closes payment and other accounts of the trust at banks, issues powers of attorney and exercises all other functions related to the management of the trust's production and economic operations;

Within the limits of his competence issues orders, cancels or alters the orders of the leaders of production units and subordinate independent enterprises which run contrary to the current legislation, enforceable enactments and the present regulation;

Hires and dismisses employees in accord with the labor legislation, within the limits of the established nomenclature, takes measures of commendation and imposes penalties on trust employees;

Sends employees on official missions to the construction organizations and enterprises of the trust as well as in accord with the current legislation to other organizations and enterprises.

2.3. The chief engineer of a trust, the deputy managers, the chief of the legal department (the chief of the legal bureau, senior legal consultant or legal consultant) of a trust are appointed and dismissed upon the request of the trust's manager within the procedure stipulated by the USSR ministry (department) or by the council of ministers of a Union republic.

The chief bookkeeper of a trust is appointed and dismissed by the body appointed by the trust manager in the established procedure.

The chief engineer, the deputy managers of the trust, within the limits of the competence set by the trust manager, act on behalf of the trust, they represent it in state and public institutions and organizations, they can carry out economic operations, conclude contracts without authorization from superior levels and also may grant power of attorney to trust employees.

2.4. A production unit is headed by a chief.

A chief, the chief engineer, the deputy chiefs and head bookkeeper (senior bookkeeper with the rights of a head bookkeeper) at the production unit of a trust are appointed and dismissed by the manager of the trust or in a procedure stipulated by the USSR ministry (department) or by a Union republic council of ministers.

2.5. The chief of a production unit organizes all operations and is responsible for the activities of the production unit.

Within the competence of a production unit, the chief, in accord with the current legislation, the present regulation and the regulation governing the given production unit has full control over the property assigned it, he may issue orders, open a current account in a bank and in instances, when the production unit is located away from the location of a trust, upon authorization from the trust a payment account for this unit (a production unit of a specialized trust can open a payment account independently of the location of the trust), he hires and dismisses employees in accord with the labor legislation, upon authorization of the trust concludes economic contracts (the list of these contracts is determined by the trust) and for which the trust is responsible. The chief of a production unit in the established procedure approves measures of commendation and imposes penalties on employees of the production unit.

2.6. Collective contracts in a trust, production units and independent enterprises subordinate to the trust are concluded in the procedure set out by the USSR Law "Governing Labor Collectives and Increasing Their Role in the Management of Enterprises, Institutions and Organizations" by the AUCCTU and by the USSR State Committee for Labor and Social Questions.

The administration of a trust, production units and independent enterprises subordinate to the trust together with the appropriate trade union committees:

Submits for approval by the labor collective the internal labor rules for the workers and employees;

Considering the recommendations of the labor collective allocates housing space in the trust's housing as well as housing made available to the trust in other buildings;

Organizes the socialist competition for the members of the labor collective.

2.7. For reviewing technical and economic problems related to the development of the construction-installation trust, for working out recommendations on the use and introduction into production of modern achievements in Soviet and foreign science and technology, major inventions and the results of scientific discoveries, the scientific organization of labor and advanced experience, a trust may establish a technical and economic council from highly skilled specialists, production innovators and representatives of scientific research and other organizations.

The membership of a technical-economic council and its charter are approved by the manager of the trust.

2.8. In accord with the USSR Law "Governing Labor Collectives and Increasing Their Role in the Management of Enterprises, Institutions and Organizations," the general meetings (conferences) of the trust's labor collective:

Review the most important questions in the life and activities of the labor collective;

Upon suggestion of the administration and trade union committee, approve the internal labor rules for the workers and employees and adopt socialist obligations;

Approve the conditions of the socialist competition and set measures of moral and material incentives for the winners, and review other questions comprising their competence.

2.9. In the aim of widely involving the workers and employees in settling production questions at the trust and the independent enterprises subordinate to the trust, the labor collectives, in accord with the legislation of the USSR and the Union republic, elect permanent production meetings which carry out their activities in accord with the Regulation Governing the Permanent Production Meeting as approved by the USSR Council of Ministers and the AUCCTU. The administration of the trust, the production units and the independent enterprises under the trust are obliged to ensure in every possible way the successful work of the production meetings and the fulfillment of their decisions.

2.10. The leaders of the trust, the production units and the independent enterprises under the trust are obliged to provide every possible aid to the work of the people's control groups and posts, to review their proposals and

recommendations and promptly adopt the necessary measures to eliminate shortcomings.

2.11. The trust in the established procedure carries out inspections and an annual complete audit of the production and financial-economic activities of its production units and subordinate independent enterprises.

3. The Property of a Trust

3.1. The property of a trust consists of the fixed and working capital assigned to it and comprising its charter capital as well as the assets and other property assigned to the trust.

The property assigned to a trust is reflected on its independent balance sheet.

With the placing of independent enterprises under the trust, their property is reflected on the independent balance sheets of these enterprises. In such instances the trust draws up a summary balance sheet (balance sheets).

A production unit can have a separate balance sheet.

3.2. A trust establishes the following funds:

The production development fund;

The material incentive fund;

The fund for sociocultural measures and housing construction;

The fund for assisting the introduction of inventions and innovation proposals;

Other funds in accord with Soviet legislation.

The procedure for forming and expending the funds is determined by the current legislation and the present regulation.

3.3. The profit deduction rates into the material incentive fund, the fund for sociocultural measures and housing construction and the production development fund are determined as a whole for the trust in the established procedure by the superior body. The specific uses of the money of the production development fund, the material incentive fund and the fund for sociocultural measures and housing construction are determined by the trust manager with the participation of the labor collective and are spent according to specific purpose, with unused balances of the funds being carried over to the following year and not subject to confiscation.

3.4. The trust turns over to production units for their use a portion of the material incentive fund and the fund for sociocultural measures and housing construction.

The trust manager has the right, as an exception, to permit the construction organizations which are part of this trust operating on the basis of production units, to form a material incentive fund from the profit received by these organizations from the results of their operations.

The trust and the appropriate trade union committee approve the estimates for the expenditure of the material incentive fund and the fund for sociocultural measures and housing construction after their discussion and approval by the labor collective.

In instances when the trust has under it individual independent enterprises which have the rights stipulated by the Regulation Governing a State Socialist Production Enterprise, the trust can centralize up to 10 percent of the material incentive fund of these organizations and enterprises.

3.5. The total amount (rate) of own working capital of a trust, its increase or reduction are approved in the established procedure proceeding from the plan quotas and in accord with the approved consumption rates and supplies of material commodities.

The working capital assigned to a trust within the stipulated rate cannot be confiscated by a superior body for the year. Excess working capital (above the rate) can be confiscated from a trust by a superior body only through the procedure of redistribution according to the trust's annual report or with a change in the internal working capital rate related to a change in the trust's contracting plan and production plan.

3.6. The trust assigns to the production units a portion of the trust's fixed and working capital necessary for them to carry out the production program.

Working capital is assigned to the production units in accord with the established standards (rates) and can be taken from them by the trust only with a change in these standards (rates) in the established procedure.

If the production units and the independent enterprises subordinate to the trust form surplus materials classified as fixed and working capital, the trust has the right and upon the proposal of these enterprises the duty to confiscate these surpluses from them.

3.7. A trust makes amortization deductions for major overhauls and for the full replacement of fixed capital within the procedure and amounts set by current legislation.

The amortization deductions earmarked for the full replacement of fixed capital within the established amounts are left at the disposal of the trust and are included in the production development fund. The remaining portion of amortization deductions earmarked for the full replacement of fixed capital, in accord with the current legislation, goes for financing capital investments.

3.8. The fixed capital assigned to the trust (buildings, structures, operating equipment and other fixed assets) can be turned over by the trust to other enterprises and organizations in the procedure established by USSR and Union republic legislation.

Temporarily unused buildings and structures, production, warehouse and other facilities, equipment, means of transport and other objects classified as the trust's fixed assets, in accord with the current procedure can be leased by the trust to other enterprises and organizations. The leasing fee for buildings, structures and facilities is charged at rates in effect in the locality where they are located and for other facilities considered as fixed capital, in an amount not over the total amortization deductions for the given type of property.

Above-norm and unused materials (equipment, means of transport, materials, fuel and so forth) may be sold by the trust in the established procedure.

Amounts received as a result of the sale of materials considered as working capital remain at the disposal of the trust as working assets, while the amounts received from the sale of assets considered as fixed capital remain at the disposal of the trust and are put by it in the production development fund.

3.9. All the housing space built from money of the fund for sociocultural measures and housing construction and other assets of the construction-installation trust which, in accord with the current legislation, can go for housing construction is to be tenanted in accord with the decision of the trust administration and the trade union as approved by the executive committee of the soviet. All housing area built from money of the fund for sociocultural measures and housing construction and made available to the production units is to be tenanted in the designated herein procedure.

Enterprises involved in trade, public dining and consumer services can be located in housing built with the designated funds only with the approval of the administration of the trust (production unit) and the appropriate trade union committees.

3.10. The trust and the production units provide for gratis use to the appropriate trade union committee of the trust (production unit), buildings, spaces, structures, gardens and parks which are on the balance sheet of the trust (production unit) or lease by them and designated for carrying out cultural-educational, health, physical culture and sports work among the employees of the trust (production unit) and the members of their families, Pioneer camps, as well as buildings, spaces and structures assigned for conducting technical propaganda.

The maintenance, repair, heating, lighting, cleaning, security and equipping of the designated facilities are at the expense of the trust (production unit). In instances when these are also used by employees of other enterprises and organizations, these enterprises and organizations participate proportionately in the designated expenses.

[Text] 3.11. A trust (a production unit) provides the appropriate trade union committee and other social organizations of the trust (production unit) free use of rooms necessary for their work and for holding employee meetings, it provides equipment, heating, lighting, security and cleaning of these rooms as well as transport and communications, it transfers gratis from balance sheet to balance sheet to these enterprises of the trust cultural, domestic and sports supplies purchased by the trust's funds which in accord with the current legislation can be employed to purchase such supplies.

3.12. The trust provides gratis:

Rooms for the public health institutions located at the trust or their structural subdivisions as well as heating, lighting, water supply, security, cleaning and repair of these rooms;

Rooms for dining rooms and other public dining organizations running on the trust's balance sheet or located on the trust's territory and serving the employees, as well as providing heat, lighting and water supply for these rooms.

3.13. The trust provides free rooms to the secondary general education evening (shift) and correspondence school, to the evening (shift) vocational-technical school, to the courses and training center (point) for improving skills in which employees study, for training purposes as well as the necessary equipment, instruments, tools and materials for training laboratories and offices, in providing repairs and maintenance for the rooms, including the supply of electric power and heat.

4. Rights and Duties of a Trust

In the area of planning and management

4.1. The trust's administration with the participation of the trade union and other public organizations and the labor collective, proceeding from the control figures set by the superior organization, works out draft five-year and annual plans for all types of its operations, it coordinates all sections of the plan and ensures the full utilization of the trust's production capacity and internal reserves, it determines the actual amounts of work and the dates for completing production capacity and facilities on the basis of the standards for the length of construction and the state of the backlog and as part of the five-year plan works out a section for the development of the trust's production capacity.

The superior body with the participation of the trust examines and approves its five-year and annual plans according to the established system of indicators and economic standards.

The indicators of the trust's plans which are not approved by the superior

body are worked out by the trust and are employed as calculation materials for backing up the plans.

The superior body promptly provides the trust with the financial and material-technical resources needed for carrying out the plan quotas set for the trust, it sets the limits for the trust on the basis of the current norms and the valid calculations of the trust and also establishes the norms for the number and wage fund of the managers, engineers, technicians (including line personnel) and employees per million rubles of construction-installation work.

4.2. Changes in the plan quotas set for the trust can be made by the superior body only in exceptional instances, with the preliminary discussion of these changes with the trust and in the established procedure. With a change in the plan quotas for a trust by a superior body, the necessary changes must also be introduced simultaneously in all the interrelated plan quotas, including relations with the budget.

4.3. The trust in accord with the plan quotas approved for it works out a five-year plan with a breakdown of the main indicators for the years of the five-year plan, an annual stroyfinplan [construction-financial plan] as well as quarterly and monthly plans for the trust's production and economic operations.

A trust directs the organization of planning work in the production units and independent enterprises subordinate to the trust and provides the high quality and prompt elaboration of the plans, their stability, as well as exercises constant supervision over their fulfillment.

4.4. The trust within the limits of the plan approved for it establishes the indicators which ensure the fulfillment of the plan quotas set for the trust for the production units comprising it and the independent enterprises subordinate to the trust.

The production units and the independent enterprises subordinate to the trust, on the basis of the indicators set by the trust, work out and approve annual, quarterly and monthly plans for production and economic operations of the production units and enterprises and ensure the prompt and high-quality fulfillment of the approved plans.

4.5. In accord with the plans approved for the trust, the trust concludes contracts for capital construction with clients, subcontracting contracts for carrying out construction, installation and special construction work as well as other economic contracts and bears responsibility for the high-quality execution of the construction-installation work and the prompt completion of the production capacity and facilities.

4.6. A trust has the right:

To accept from other enterprises and organizations orders for carrying out work and manufacturing products above the plan using the client's raw products and materials, if this does not cause harm to the fulfillment of the state plan approved for it and the contractual obligations.

With the permission of the USSR ministry (department) and for trusts of republic affiliation in the established procedure, to turn over under contract to contracting organizations with their approval as well as accept from the enterprises of client ministries and departments the execution of construction-installation work as well as the related appropriate limits for labor, capital and materials, with the subsequent notification of the superior body.

4.7. A trust, proceeding from the established plans, the volume and nature of the construction, works out proposals and measures to improve the network of production units comprising it as well as independent enterprises subordinate to the trust, for their effective consolidation and increase in the amount of work performed by them as well as for developing specialization.

4.8. The trust's structure is approved by the ministry of department, the structure of a production unit is worked out in relation to the standard structures and is approved by the trust.

The staff schedule for the employees of the trust's management apparatus, including the production units comprising it as well as the estimate of expenditures for the support of this personnel are approved by the trust manager in the established procedure and do not require registration with a financial body.

4.9. The manager of a trust (general contractor trust) prior to the start of construction, depending upon the nature, labor intensiveness and amount of work the execution of which ensures the achieving of the end results, determines the completion of production capacity and the amount of construction at the designated times, the conditions and amounts of bonuses paid for completing this capacity and project for each collective involved in construction. The manager of the trust has the right to reduce (but by not more than 50 percent) the total amount of money going for bonuses for the completion of production capacity if the collective does not promptly fulfill the schedules for carrying out the work. Unused money may be spent to pay bonuses to workers of other organizations which have helped to accelerate construction and complete the designated capacity and projects on time.

4.10. The manager of a trust has the right to set aside a portion of the funds earmarked for paying bonuses for the completion of construction capacity and construction projects for encouraging workers of independent industrial enterprises subordinate to the trust, the employees of motor transport organizations directly involved in building the designated projects and who have contributed to the rapid completion of construction, as well as utilize (under the condition that the trust is the general contractor), with the agreement of the trade union committee, up to 5 percent of the money set aside for paying bonuses in the form of an advance for encouraging employees for the results of the socialist competition for the prompt and high-quality execution of important stages of construction.

4.11. The trust may classify the production units and independent enterprises subordinate to the trust, depending upon the amount of construction-installation work performed by them and the production volume, by wage groups for managers and engineers and technicians and may shift them from one group to another depending upon a change in the annual work volume following the procedure set out by the USSR ministry (department) or by the Union republic council of ministers, in being guided here by the properly established indicators.

4.12. A trust works out and, after approval by a superior body, implements measures to improve the management structure, to reduce expenditures on the support of the management staff, on employing highly productive computer equipment, as well as on introducing and developing automated control systems.

In the Area of Scientific and Technical Progress

4.13. A trust works out and approves in the established order long-range and annual plans for developing and introducing new equipment, providing in them for the use of the most recent scientific and technical achievements, greater prefabrication in construction, full mechanization of construction work, improved production methods in the sphere of industrial production and construction, the use of progressive materials and elements, improved construction quality and other measures to improve the organizational and technical level.

4.14. A trust:

a) Ensures a continuous rise in the organizational and technical level of construction work, an improvement in the production processes, full mechanization of the main and auxiliary production processes on a basis of using advanced domestic and foreign experience employing modern managerial methods and means;

b) In accord with the current legislation, works out technical and economic norms, standards for the consumption and supplies of raw products, fuel, materials, standards for the consumption of thermal and electric power for production and operating needs with the approval of these by the superior body according to the nomenclature established for them;

c) Revises and approves the standards and norms according to the list set by the superior body within its competence;

d) Systematically improves its technical production facilities in the aim of ensuring the fulfillment of the volume of construction-installation work and broadening the output of progressive elements and materials.

4.15. A trust with its own forces or with the involvement of design or production-design organizations, carries out the engineering preparation of production, works out the plans for carrying out the work, stipulating in them the use of industrial, flow and other progressive methods for organizing production, schedules for executing the work (for the individual buildings and

structures), the rational use of construction facilities, equipment and transport, the introduction into practice of the methods of the scientific organization of labor, the brigade contract and other advanced methods for organizing and managing production as well as measures to exercise control over construction quality.

4.16. A trust organizes work in the area of invention and innovation on the basis of long-range and current subject plans, it ensures the prompt utilization of inventions and innovation proposals as well as the proper

payment of remuneration for the introduction of inventions and innovation proposals as well as bonuses for assisting invention and innovation.

4.17. A trust can conclude contracts with scientific research, design, engineering and other organizations and enterprises for carrying out scientific research, design, engineering and production work, for manufacturing and delivering new types of products and for providing the necessary services. Expenditures for the designated work are made within the limits of allocations approved for the trust for these purposes from money of the centralized fund for the development of new equipment as well as from bank credits.

4.18. A trust, in the aim of developing the initiative of the trust employees, provides all possible aid for the activities of the primary organizations of the scientific-technical societies and the All-Union Society of Inventors and Innovators, involving them in the elaboration of specific tasks for the technical development of production, the draft long-range and current plans for introducing new equipment, inventions and innovation proposals as well as in carrying out these plans and holding competitions for invention and innovation.

4.19. The trust administration, together with the trade union committee and the councils of the primary organizations of the scientific-technical societies and the All-Union Society of Inventors and Innovators, regularly holds production-technical and economic conferences and meetings for the engineers and technicians, the pacesetters and production innovators for discussing questions of technical progress, the economic development of the trust as well as for working out recommendations and proposals aimed at further improving the equipment, production methods, production management, and provides the prompt implementation of these recommendations and proposals.

In the Area of Own Capital Construction

4.20. A trust works out annual and long-range plans for internal capital construction for production- and nonproduction-end projects, it carries out the construction of these projects by its own forces and funds, simultaneously fulfilling the functions of client and builder. For carrying out this construction a trust can call in other contracting organizations, concluding the appropriate contracts with them.

4.21. A trust provides:

The most effective use of the capital investments allocated for its own capital construction, the primary allocating of these funds for reconstruction and technical reequipping of the trust's fixed capital and the concentrating of the funds on the most important projects.

A reduction in the cost of its own construction as well as the observing of the standards for the length of construction and the dates for completing the new capacity and fixed capital, the complete putting into operation of production capacity at the designated standard times and the prompt training of operating personnel.

4.22. A trust may conclude contracts with design organizations for working out the design estimate specifications for its own construction projects.

4.23. A trust approves:

The design and estimate specifications and the title lists for its own capital construction, the title lists for design and research work for construction in the procedure established by the USSR ministry (department) or by an Union republic council of ministers;

Within its competence the design and estimate specifications and the title lists for the technical reequipping of operating enterprises and other production-end projects to be carried out using the money in the production development fund and left to the disposal of the trust for these purposes, regardless of the estimated cost of the work;

The design and estimate specifications and the title lists for the construction, expansion and reconstruction of projects to be carried out from money in the fund for sociocultural measures and housing construction and other financing sources left for these purposes at the disposal of the trust, regardless of the estimated cost of the work;

Design and estimate specifications for the major overhaul of enterprises from money in the amortization deduction fund;

Title lists for the building of housing and cultural, service and communal projects carried out by state capital investments and granted credits, with the exception of the title lists for newly commenced houses of culture and sports, clubs, stadiums, swimming pools as well as sanatoriums, vacation houses and boarding houses;

Title lists for the construction of projects related to labor safety, safety equipment and production sanitation;

Internal project title lists.

The title lists for the building of housing and cultural and service projects using the fund for sociocultural measures and housing construction as well as the title lists for building projects to ensure labor safety, safety equipment and industrial sanitation are approved by the trust with the agreement of the appropriate trade union committee.

4.24. Approved title lists for the trust's enterprises (projects) should be a permanent planning document for the entire construction period.

4.25. A trust sets the volume of major overhaul financing from the amortization deductions earmarked for major overhaul as well as the major overhaul plans and within the established limits approves the corresponding financial estimate calculations.

4.26. A trust can:

For building children's preschool institutions use a portion of the money allocated to it through centralized channels for housing construction, without reducing the plan for completing housing. The decisions for using this money are taken by the trust manager with the appropriate trade union committee;

Build housing, build and expand utility facilities, medical and children's preschool institutions, Pioneer camps and other cultural and service facilities together (with proportional participation) with other organizations and enterprises using capital investments allocated to the trust for these purposes.

4.27. A trust has the right to approve uniform rates for construction-installation work for its own capital construction when the need for these arises in the course of construction, if the rates for these jobs have not been provided in the established order.

4.28. A trust accepts completed projects in the established order and organizes their operation in accord with the quotas of the production plan and the designed capacity.

In the Area of Material-Technical Supply

4.29. A trust, in accord with the current statewide supply system, organizes and provides the material and technical supply for the trust, it justifies (defends) in the superior management bodies the requests for the necessary material and technical resources on the basis of the design and estimate specifications.

The trust sets for the production units and independent enterprises subordinate to the trust material stock standards and also issues the limits (allocations) to them for material resources and redistributes these in the established procedure considering the changes in the production program.

4.30. A trust distributes special clothing and other individual protective gear to the production units and independent enterprises subordinate to the trust, it sets for the production units differentiated quotas for the saving of material and fuel-energy resources and quotas for the collection, processing and use of secondary resources, scrap and waste ferrous and non-ferrous metals.

4.31. A trust provides for the realization of the allocations granted it and

is responsible for the economic use and proper storage of the received material resources.

4.32. A trust can conclude long-term contracts with the territorial bodies of the USSR Gosnab for material-technical supply of the trust and which guarantee full supply of the necessary materials and products and centralized delivery of them according to approved schedules, as well as for selling surplus and unused material resources.

4.33. A trust works out and approves the calculated planned prices for payments between the production units and independent enterprises subordinate to the trust for materials fully delivered by the material-technical supply subdivisions, for the products of subordinate production and the services of the transport and other systems.

4.34. The trust has the right:

To dispatch, with payment in the established procedure, to organizations carrying out scientific research and design work for it under contract, the necessary materials, semifinished goods and finished articles for carrying out this work without detriment to the fulfillment of the plan for construction-installation work;

To turn over allocations to other organizations and enterprises and provide to them from its own resources materials and preassembled equipment according to the established standards for manufacturing under contract the products needed by the trust.

4.35. In accord with the current legislation, a trust can purchase without allocations from other enterprises and organizations those products which are sold without special authorization, surplus materials, and in addition purchase the necessary articles of material and technical supply through wholesale and retail trade and carry out exchange operations for the same type of products.

In the Area of the Organization of Labor, Wages, Personnel and Amenities

4.36. The trust determines the current and long-range need for labor resources, including skilled workers by professions and specialties with a higher and specialized secondary education, it provides for the creation and retaining of permanent personnel, it takes measures to provide construction with workers, engineers and technicians, it organizes the instruction of employees in the appropriate professions and a systematic rise in worker skills, and ensures their correct labor utilization.

A trust, considering the opinion of the labor collective, through the social organizations recruits and places management personnel in accord with the range of jobs set for the trust and creates a reserve of personnel for promotion to higher positions.

The trust's administration determines the job requirements and skill demands on the management personnel, the specialists and employees of the trust's

management in accord with the skill manual and in the established procedure carries out certification of the management, engineers and technicians.

4.37. The trust manager establishes and on the basis of the current legislation changes the salaries of engineers, technicians and white collar personnel of the trust management in accord with the wage group set for the trust following the indicators approved by the USSR State Committee for Labor and Social Questions, the USSR Gosstroy and the AUCCTU, the approved salary scheme and within the limits of the wage fund calculated from the average salaries of the salary scheme.

In the same manner the chief of a production unit establishes and changes the salaries of the engineers, technicians and white collar personnel of the management and the line personnel of a production unit.

4.38. A trust constantly improves the organization of labor and carries out measures to increase labor productivity, to introduce a scientific organization of labor, to strengthen the construction brigades, to carry out construction basically by the method of the brigade and complete flow contract as well as to develop the watch, expeditionary and other progressive methods for organizing labor.

A trust (production unit) in the established procedure can include in a consolidated brigade (where this is advisable) engineers and technicians and entrust them with the leadership of these brigades with wages in accord with the results of the brigade's work.

4.39. A trust together with the trade union committee works out and implements measures to improve the organization of wages for the employees, to employ the job system and other progressive forms of wages, and ensures the correct ratio between the growth of labor productivity and the growth of wages and the economic expenditure of the wage fund and the material incentive fund.

4.40. A trust organizes and carries out work in the area of technical norm setting and increasing the level of this, and systematically checks the existing standards and norms for labor and the correct application of the unified standards and rates for construction-installation work; in the established procedure it introduces new departmental and intersectorial time standards and other norms and with the participation of the norm-research stations and other organizations, analyzes the losses of working time and takes measures to eliminate them.

4.41. A trust carries out measures to strengthen labor discipline, to observe labor legislation, the rules and standards of labor safety, safety equipment and production sanitation and organizes meals for workers at the projects as well as employees living in a dormitory; in the necessary instances it also delivers employees to the work site and brings them back.

[Text] 4.42. A trust provides the constant improvement in the housing and cultural-service conditions of the employees, it organizes the construction of housing, children's preschool institutions and cultural-service facilities and assists with cooperative and individual housing construction.

4.43. In the aim of training the trust personnel and systematically increasing their skills, the trust in the established procedure sets up its own training center directly on the job for individual and brigade instruction of the workers as well as special schools and training centers for studying advanced labor methods.

4.44. A trust can send leading workers and employees for instruction to higher and specialized secondary schools and pay them a scholarship in accord with the current legislation under the condition that they return to work at the trust upon completing the school. The applicants to be sent for instruction to higher and secondary schools with the paying of a scholarship at the trust's expense are to be approved by the trust's labor collective.

For workers studying in schools without leaving the job a trust establishes the necessary conditions for combining instruction with work and grants them benefits provided by the current legislation.

4.45. The trust works out and approves in accord with the current legislation and with the agreement of the trade union committee a regulation governing the payment of bonuses to trust employees from the material incentive fund formed from profit deductions. Here the indicators, the conditions and the amounts of the bonuses for management workers of the trust management are set by the leader of the superior organization with the approval of the appropriate trade union committee.

For services in the area of construction and for the successful completion of production quotas, workers, engineers, technicians and white collar personnel of a trust, considering the opinion of the labor collective, can be submitted by the trust in the established order for the awarding of USSR orders and medals, for the presentation of honorific titles and other types of commendation.

4.46. A trust has the right, with the approval of the trade union committee:

a) To establish the piece, time or contract wage system for individual employee groups and in the instance provided by the current legislation also for engineers, technicians and white collar personnel;

b) To determine:

The list of worker professions for which the wage rates of piece workers are set with time wages as well as the individual worker professions for which monthly salaries are set instead of wage rates in accord with the list approved in the established order. The wage rates of piece workers can be

employed for time workers under the condition that they work according to sectorial or other technically sound standards of labor expenditures (normed quotas, service standards and norms for the number of employees);

Lists of worker professions and jobs paid at increased wage rates due to heavy and harmful working conditions, particularly heavy and particularly harmful working conditions, in accord with the current standard lists of these professions and jobs for the production sector;

c) Approve a list of jobs for which, according to the type of work, it is impossible to set a shortened workday for the employees of these jobs on the days before the day off (with a 6-day work week) and on days before holidays but rather additional rest should be provided as hours of overtime accumulate.

d) To determine the job categories and in the established procedure assign the categories to workers in accord with the unified wage-skill manual;

e) Set for the workers with an unnormed workday the duration of additional time off in accord with the legislation and the list of worker positions with an unnormed workday approved in the established order;

f) Approve in the established order new output rates, machine tending rates, norms for the number of workers and other labor expenditure norms as well as revise the current ones;

g) To set for the leaders of brigades and teams additional payment for the leading of the brigade and team under the conditions and within the amounts stipulated by the current legislation;

h) Determine on the basis of the approved sectorial standards the lists of jobs and professions which give the workers and employees the right to free special clothing, special footwear and protective devices as well as the list of jobs and professions giving employees the right to receive milk in line with harmful working conditions and for the receipt of special soap;

i) To set reduced output standards for young workers who have been hired upon completion of general education schools, vocational-technical schools and courses as well as those who have undergone training directly on the job, in the instances and amounts stipulated by the legislation for a certain time;

j) To set increased surpayments to the wage rates of highly skilled workers employed in particularly crucial jobs for professional skill (up to 16 percent of the wage rate for a worker of category IV, to 20 percent for category V and to 24 percent for category VI). The designated surpayments are reduced or completely eliminated with a deterioration of the indicators;

k) To pay one-time remuneration to workers, managers, engineers and technicians for the elaboration and implementation of measures which reduce the number of employees and increase labor productivity in comparison with the plan. The amount of the remuneration is set depending upon the achieved level of increased labor productivity and the actual savings of the wage fund obtained from introducing the designated measures.

The additional payments stipulated in subpoints "j" and "k" of the current point are made from the savings in the wage fund;

1) To set additional wages for workers and line engineers and technicians amounting to 35 percent of the hourly wage rate (salary) for each hour of nighttime work within the limits of the trust wage fund and the estimated cost of building the corresponding projects.

4.47. A trust can use for paying extra remuneration amounting to 50 percent of the salary of a worker, including the leaders of the trust and production units, line personnel and employees of the management of the trust and these production units, all the savings of the wage fund received from reducing the number of managers, engineers, technicians and white collar personnel against that envisaged by the norm and calculated proceeding from the actual volume of construction-installation work carried out over the year. The designated additional remuneration is reduced or eliminated completely with a deterioration in the work indicators.

4.48. In individual instances, a trust may maintain for a skilled worker, engineer or technician of the trust, his average wage if the employee is moved to newly completed production units producing structural elements and articles during the period of starting up production but for not more than 6 months, if the wage at the new workplace is below the earnings received at the previous job.

4.49. A trust, with the approval of the appropriate trade union committee, can, in revising the standards on the basis of introducing organizational and technical measures, utilize a portion of the savings obtained from this for additional wages paid to workers during the period of introducing the new output and servicing rates for a period of 3-6 months. From the money of this savings it is also possible to pay bonuses to the foremen and other engineers and technicians of the production sections who took a direct part in working out and introducing the designated organizational and technical measures.

4.50. A trust has the right to pay surpayments on wages and salaries:

To workers for combining jobs and carrying out the set volume of work with a smaller number of workers;

To skilled workers employed in particularly crucial jobs for high professional skill;

To engineers and technicians and primarily to foremen as well as white collar personnel for high skills.

The designated surpayments are to be made in the procedure and amounts stipulated by the current legislation.

4.51. A trust can utilize the relative savings for the wage fund obtained in the previous quarters and months and recalculated in accord with the percentage of plan fulfillment (considering the current norm) to pay the wages

and bonuses in subsequent quarters and months of the same year.

A trust has at its disposal and transfers to the material incentive fund the savings in the wage fund calculated proceeding from the actual fulfillment of the volume of construction-installation work over the year.

An overexpenditure committed in the wage fund must be recovered without fail (during the year in which it occurred) from a savings in the wage fund or from the material incentive fund of the trust, and if this is not sufficient, from the reserve wage fund or the material incentive fund of the ministry (department).

If at the end of the year there is an unrecovered overexpenditure of the wage fund, remuneration for the overall work results for the end of the year are reduced for the trust managers in accord with the current legislation.

Bonuses calculated for managers and employees of the trust management staff, with a relative overexpenditure in the wage fund for the trust as a whole, are reduced by the total overexpenditure, but by not more than 50 percent of the calculated bonuses for the time until the recovery of the overexpenditure.

Bank control over the expenditure of the wage fund is exercised for the trust as a whole. Here, if there is an overexpenditure of the wage fund for the production units or for the independent organizations operating on an independent balance sheet while there is a savings for the trust as a whole, the trust covers the existing overexpenditure for the subordinate organizations.

In the absence of an overexpenditure of the wage fund for the trust as a whole, the trust can write off an unrecovered overexpenditure in the wage fund for a previous period and which occurred among individual production units.

With a savings in the wage fund for the trust as a whole, the trust has the right to permit the full payment of bonuses to managers, engineers, technicians and white collar personnel of the production units which improved their operations but did not repay an overexpenditure of the wage fund committed in a previous period.

Bonuses for senior work superintendents (section chiefs), work superintendents and foremen are paid regardless of the state of the wage fund overexpenditure for the trust (production unit) as a whole. Here the leader of the trust (production unit), with an unrecovered overexpenditure of the wage fund for the section and arising out of the fault of the foreman, work superintendent or senior work superintendent (section chief), can reduce the amount of the bonuses for these workers but not more than 50 percent both in the quarter in which the overexpenditure occurred as well as in the subsequent quarter of the calendar year, until its recovery, with the subsequent payment of the bonus in the established procedure.

The trust has the right when necessary during the year and in the established procedure to reaffirm the wage rates for the production units and the independent enterprises subordinate to the trust without making changes in the

rates for the trust as a whole.

4.52. The chief of a production unit with the permission of the trust manager can:

a) Send the employees of a production unit on an official mission to the construction organizations and enterprises subordinate to the trust and in accord with the current legislation also to other organizations and enterprises;

b) With the approval of the trade union committee set piece, time and contract wages for individual groups of employees;

c) With the approval of the trade union committee determine the list of worker professions for which, with time wages, the wage rates of piece workers and monthly salaries are employed instead of the rates of time workers;

d) With the approval of the trade union committee, to award categories to workers in accord with the unified wage-rate manual;

e) In exceptional instances grant to individual workers an unplanned advance to come from wages and amounting to not more than a month's earning;

f) In necessary instances to grant to workers at their request brief unpaid leaves.

In the Area of Finances, Credit, Accounting and Reporting

4.53. A trust organizes and carries out the work related to financial planning, it works out and implements measures to fulfill the quotas of the financial plan, to strengthen cost accounting, planning and financial discipline, to increase profitability, it ensures the safekeeping, specific and effective use of working capital and the acceleration of its turnover rate, the fulfillment of the annual and quarterly quotas set by the superior body for budget payments, the prompt carrying out of payments with the banks, suppliers, clients, subcontracting organizations, with the superior organization, with the workers and employees for wages and the fulfillment of obligations stemming from the financial plan and contracts.

In working out the financial plan the trust mobilizes the internal reserves, reduces the costs of construction and thereby increases accumulation.

4.54. A trust opens in the established order at banking institutions a payment account, an account for financing capital investments as well as other accounts and carries out the corresponding operations relating to them.

4.55. A trust can use bank credit and bears responsibility for its proper use and prompt repayment within the procedure established by the USSR Stroybank and the USSR Gossbank as well as for the proper use of internal funds.

4.56. Payments to the budget and to banking institutions for loans, payments to suppliers, clients, subcontracting organizations and credit relations are

carried out for the trust as a whole. With the authorization of the trust, production units can make payments on the trust's behalf with suppliers, clients and subcontracting organizations and also carry out credit relations with the banking institutions.

The independent enterprises and organizations subordinate to the trust and having the rights stipulated by the Statute Governing a Socialist State Production Enterprise make payments to the budget and banking institutions on loans, payments to suppliers, clients and subcontracting organizations as well as carry out credit relations with the banking institutions within the procedure set out, respectively, by the USSR Gosbank and the USSR Srobybank.

4.57. A trust determines the rates of own working capital as a whole and for the specific items, it coordinates the overall total norm with the superior body and sets the norms for own working capital for the production units and general norms for the independent enterprises subordinate to the trust.

4.58. A trust for not more than 3 years makes up for the shortage of its own working capital formed as a result of the nonfulfillment of the profit plan or the making of above-planned expenditures financed from profit using for this the fulfillment of the quotas set by the superior body for earning additional profit from carrying out organizational and technical measures as well as from the portion of above-planned profit to be spent for this purpose in the established procedure and from reducing up to 30 percent the profit deductions into the material incentive funds.

The procedure for replenishing the shortage of own working capital formed by the individual production units as a result of their nonfulfillment of the profit plan or the carrying out of above-planned expenditures financed from profit (in maintaining the overall working capital norm set for the trust as a whole) is determined by the trust considering the recovery of these amounts primarily from the production units where the shortage formed, including by reducing the amount of money allocated to the production units from the economic incentive funds within the limits of up to 30 percent.

4.59. In accord with the current legislation a trust works out estimate financial calculations and calculations for the repayment of expenditures to carry out measures related to the development and introduction of new equipment and new materials, for mechanizing and automating the construction and installation work and the building industry enterprises, for modernizing equipment, for improving production methods, for rationalizing and intensifying the production processes. The designated calculations are approved by the bank manager.

4.60. A trust can write off from its balance sheet buildings, structures, machinery, equipment, transport and other property considered as fixed capital prior to the end of their amortization life in those instances when these are no longer usable as a consequence of accidents or natural disasters.

In other instances the property indicated in the first paragraph of the current point can be written off with the permission of the ministry (department) or another superior body determined by the ministry (department).

4.61. A trust has the right to write off from the balance sheet, while informing the superior body of this, the following as a loss, :

Debts and liabilities for which the statute of limitation is passed;

Awarded debts for which the papers have been returned with the court-approved statement on the insolvency of the accused and the impossibility of laying claim to his property;

Other debts recognized by the trust as impossible to collect;

Shortages of materials above the loss standards as well as losses from the damage of materials and products in instances when the specific guilty parties are not established (within limits up to 100 rubles);

Debts for shortages of materials the claiming of which has been rejected by the court as a consequence of the invalidity of the claim (within limits up to 100 rubles).

4.62. The writing off of losses from the trust's balance sheet can be done only after a careful check of the reasons for the losses with the participation of the social organizations, the ascertaining of the guilty parties of this and after adopting the necessary measures to recover the amounts lost in accord with the current legislation.

4.63. A trust works out and approves the income plans and the estimates of expenditures for its own housing and utility system and subsidiary organizations, the estimated expenditures for the running of buildings, interior areas, structures, gardens, parks and Pioneer camps turned over for gratis use to the trade union organizations.

4.64. A trust keeps bookkeeping, operational and statistical accounting; in the established order it draws up and submits to the corresponding bodies reporting on all types of production and economic operations of the trust according to the approved forms and at the designated dates and bears responsibility for its reliability; it provides centralization and mechanization of reporting and computational work and introduces progressive accounting methods. Statistical reporting for the trust and its production units is submitted in the order and at the times established by the USSR State Statistical Administration.

4.65. The trust establishes unified archives for the storage of documents of all the production units. The production units located away from the trust may also establish their own archives for directly serving them.

5. Reorganization and Liquidation of a Trust

5.1. The reorganization (merger, incorporation, separation and breaking off) and liquidation of a trust are carried out in the established procedure upon the decision of the body empowered to form the designated trust.

5.2. In the event of the merging of the trust with another trust or organization, all property rights and obligations of each of them transfer to the trust (organization) arising as a result of the merger. With the incorporation of another trust or organization in the trust, it receives all the property rights and duties of the incorporated trust or organization.

5.3. In the event of splitting up a trust, the property rights and obligations of the reorganized trust according to the act of separation transfer in appropriate parts to the new trusts or organizations arising as a result of this break-up.

5.4. The procedure and time of the trust's liquidation are established by the empowered body which took the decision to liquidate the trust. The same body should resolve the question of the procedure for carrying out concluded contracts without detriment to the fulfillment of the state plan.

5.5. The period for the submitting of claims by creditors to the trust to be liquidated is set by the body under whose decision the trust is liquidated but this cannot be less than 1 month.

5.6. A trust is liquidated either by a liquidation commission appointed by the superior body or upon its authorization by the manager of the trust being liquidated.

5.7. A liquidation commission or, in individual instances, the manager of the trust being liquidated places in the official oblast, kray or republic press organ at the location of the trust an announcement of the liquidation of the trust and the date for creditors to submit claims. Regardless of this the liquidation commission or the manager of the trust being liquidated must from all the materials available to them ascertain all the claims of the trust's creditors and inform them of its liquidation.

5.8. Claims on a trust being liquidated are satisfied from its property against which, according to the law, a claim may be made. Claims discovered and made after the end of the period set for the presenting of claims by creditors are satisfied from the remains of the designated property formed after satisfying the claims made as well as the claims presented within the established time.

Claims not discovered and not presented within the period of the trust's liquidation as well as claims not satisfied by a lack of property of the trust being liquidated are considered invalid. Equally considered completely or partially invalid claims are not recognized by the liquidation commission (by the manager of the trust being liquidated, if the creditors within a 2-week period from the day of receiving the announcement of the complete or partial nonrecognition of the claims do not bring suit to satisfy the claims.

5.9. The payment of time payments owed by the trust being liquidated due to the causing of injury or other impairment of health or involving death is provided in the procedure set out by the current legislation. Claims and suits of citizens seeking recovery of loss involving impairment of health or the causing of death as well as other claims and suits by citizens not

presented for valid reasons before the end of the liquidation may be subsequently submitted in the general procedure to the body which is superior to the liquidated trust. This body can entrust the satisfying of the demand recognized by it or granted by the court to its subordinate trust or organization which received the property of the liquidated trust.

5.10. A trust has a seal with an image of the USSR State Crest (or the state crest of a Union republic) with its own name. A production unit has a seal with its own name.

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CSO: 1821/141

CONSTRUCTION PLANNING AND ECONOMICS

USSR MILITARY DEPUTY CONSTRUCTION CHIEF ON NEW TASKS

Moscow STROITELNAYA GAZETA in Russian 21 Feb 86 p 4

[Article by Lieutenant General N. Chekov, USSR Ministry of Defense deputy chief of construction and troop housing: "Tomorrow's Horizons"]

[Text] As the 27th party congress approaches, the prevailing mood is one of orientation toward great deeds and labor accomplishments. Many military construction collectives everywhere support the initiative of the Order of Lenin Moscow Military Okrug military construction workers, who have organized socialist competition and chosen the following motto: "We will carry out the decisions of the 27th CPSU Congress; we will strengthen the nation's defenses." Among the collectives which have done exemplary work are the Moscow and Odessa Military Okrug construction agencies, organizations headed by A. Gorovatskiy, A. Gromenko, A. Navasardov, and enterprises headed by R. Khlebnikov, B. Flerov, and S. Sergeev.

Within military construction units, political organs, party, trade union, and komsomol organizations, and the units' commanders are concentrating primarily on increasing efficiency and quality, raising productivity, lowering the manufacturing cost of what they make, and using less fuel, electricity, and raw and processed materials. Our military builders are striving to back up our party's policy with their actions. This policy is oriented toward faster increases in productivity, improved industrial performance, employment of scientific developments in construction, and enhanced discipline and organization.

The following movements have grown considerably among young people working on construction projects: "Today one outstanding worker, tomorrow one outstanding team," "I am Master of the Construction Project," "Moneysavers' Subdivision," and others. The "Workers' Torch" competition program is growing. Many labor and military collectives have assumed the obligation of finishing the construction stipulated in the annual plan 10 or more days ahead of schedule. Certain outstanding military construction units are setting the accelerated pace of this work. Those in charge of these units are: Colonels F. Gorvat, Yu. Katvitskiy, A. Martirosyan, N. Sorva, and Yu. Chuprinin; and Majors I. Albitov and V. Ivanov. A healthy political, labor, and moral climate has been created as a result of: a high degree of organization within the construction industry; goal-oriented party and

political efforts at indoctrinating personnel with communist ideals; and solidarity among military units. This climate is positively affecting production, military, and labor discipline.

A typical feature of military construction projects is that most of the workers are young and, generally speaking, have little experience or training. Special worker-tutors from among the party cadres are helping these young workers learn their craft and are inculcating in them a sense of love for the builder's profession.

Communists are in the forefront of the campaign to maximize the performance of the construction industry and the quality of its work. Many of them head construction teams and units and have responsible positions in construction.

Nikolai Aleksandrovich Maksimov, RSFSR distinguished builder, head of a contract brigade and knight of the orders of the Labor Red Banner and October Revolution, is a famous figure in construction. Over the more than 10 years he headed it, his collective built housing totalling more than 58,000 square meters of living space and saved significant quantities of materials. A high level of training is helping the military construction industry perform its duties. All military construction workers have two or three related specialties. The personnel in every team are always looking actively for the most advanced way of doing their job and constantly strive to enhance labor discipline.

There are many such collectives in the construction and housing agencies of the Ministry of Defense. The following communists and experienced worker-tutors from among the party cadres are heading distinguished contract brigades: Heroes of Socialist Labor I. Savotikov and I. Osin and Knights of many orders and with many decorations A. Afanasev, A. Aleksikov, P. Ilchenko, V. Bakharev, L. Volozhinskiy, and many others.

Nevertheless, in examining the state of affairs in capital construction during the 11th Five-Year Plan, we must not forget to note that the shortcomings and unutilized potential criticized at the April 1985 plenum of the CPSU central committee are also problems in construction and housing agencies.

A number of organizations permit energy and resources to be dissipated, drag out the time it takes to get construction projects and housing finished, and have a poor productivity record. Currently, the brigade contract is the most effective way of organizing construction for basic construction collectives, yet in some places this type of contract does not get the attention it should.

We should note that the heads of construction projects have recently begun working more on using the latest developments in science and technology. They see this as an important tool that will help them raise productivity. However, many collectives are still failing to introduce the requisite new equipment, while in some the amount of equipment available to military builders has decreased. Enhancing military and labor discipline is an issue that demands serious attention.

The CPSU central committee and USSR council of ministers resolution "Improving Centralized Planning, Organization, and Management of Capital Construction" contains the following tasks for us: finishing construction projects faster; improving performance in the construction industry; raising productivity; and improving quality. "Workers' Torch" competition is playing an important part in helping to achieve these goals. When used on military construction projects, it has proved itself the form of labor cooperation which offers the best chance for fulfilling the duties assigned by the party. It is also the best way to have projects finished early. All party and administrative personnel at all levels and party, trade union, and komsomol activists must work to develop this form of competition, to support other efforts of the same kind, and to create an environment in which competitors will be able to perform their duties.

Our most important task now is to mobilize all the personnel in military construction units. The purpose of this is to have them work faster, carry out the decisions of the 27th CPSU Congress, and concentrate competitors' efforts on maximizing output with minimum expenditure of labor and material. This has to be done in such a way that a fundamental improvement in the level of organization leads to the mobilization of all economic and social potential, the more active involvement of the human factor, and, on this basis, rapid results everywhere in the construction industry. Our primary tasks are to make more effective use of the resources we have, including equipment, machinery and tools, and human labor, to ensure that labor, equipment, and state discipline are maintained, and to provide all links in the construction chain with an adequate degree of organization.

13189/13046
CSO: 1821/133

CONSTRUCTION PLANNING AND ECONOMICS

CONSTRUCTION MINISTER ON INTENSIVE DEVELOPMENT OF FAR EAST

Moscow NA STROYKAKH ROSSII in Russian No 2, Feb 86 pp 2-6

/Article by A. Babenko, Minister of Construction in the Far East and Transbaykal Regions and delegate to the 27th CPSU Congress: "Orientation -- Towards the Intensive Path of Development"/

/Text/ The Far East is one of the largest regions of the USSR. Its wealth is incalculable -- coal, gas, non-ferrous metals, wood and the energy of rivers. The accelerated mastering of these resources and the development here of the productive forces and infrastructure constitute a most important component of the party's economic strategy. The all-round "Far East" Program, for the period up to the year 2000, is being realized at the present time. A considerable increase in the volumes of construction production is expected to take place during this period.

In the transformation of the Far East and Transbaykal regions, a considerable role will be played by the collectives of Minvostokstroy: approximately 360 large industrial enterprises, more than 10 million square meters of housing space and many installations of a civil nature were built during the 11th Five-Year Plan. The industrial potential of the homeland has been augmented by the Stal Complex at the Far Eastern Metallurgical Plant in Komsomol-na-Amur, the Dalenergomash installations in Khabarovsk Kray, Buryatfermash in Ulan-Ude, the Pavlovskiy-2 coal layer in the Maritime Kray, the turbines of the Mayskiy GRES /state regional electric power plant/ in Sovetskaya Gavan, the Yaroslavl GOK /mining and concentration combining/ and power units of the Kamchatka TETs /heat and electric power plant/. Dozens of enterprises associated with the Food Program have been erected, particularly poultry factories in Khabarovsk and the Maritime krays, on Sakhalin and in Amur Oblast, a grain products combine at Spassk-Dalniy and capabilities of the Dalselmash Plant in Birobidzhan.

During the years of the 11th Five-Year Plan, the volumes of general contractual construction-installation work increased by 39 percent, an improvement was realized in the carrying out of underway programs; the task for placing apartment buildings in operation was fulfilled and labor productivity was raised by 13.7 percent. The base for the construction industry was strengthened: the capabilities for producing precast reinforced concrete were increased by 1.1 million cubic meters, KPD /large panel housing construction/ products -- by more than 790,000 square meters, carpentry products -- by 135,000 square meters, porous aggregates -- by 435,000 cubic meters and so forth. The

pool of construction machines and mechanisms increased by 30 percent. The volume of completely prefabricated construction increased from 68 to 74 percent and a twofold increase was observed in the volume of work carried out using the brigade contract method.

But higher rates of growth are required today. This task is being solved mainly by an acceleration of scientific-technical progress. A completely automated control system is being created -- ASU - Minvostokstroy. Individual sub-systems and complexes of its first phase are already in operation, particularly a sub-system for the collection and processing of information concerned with the construction of the more important projects of "AIS-OVO"; a system for developing the annual program for general contractual work, the "ASU-plan SMR"; an information system for plans for raising the technical level for construction and introducing scientific and engineering achievements "ASU-NT" and the "ASU-Bukhuchet" system.

The unit method for the planning, organization and administration of construction is used for the erection of large and structurally complicated installations. In 1985, it was used for carrying out more than one fourth of the production construction program. The 1986 calendar included 15 construction projects erected based upon use of this method, in combination with a continuous flow line brigade contract. Their number included installations of the Far East Metallurgical Plant at Komsomolsk-na-Amure, the Ussuriysk Poultry Factory in the Maritime Kray, the Dukat Mine in Magadan Oblast and others.

The all-round introduction of progressive innovations was organized in connection with the erection of the Far East Metallurgical Plant. This construction project served as a fine school for leading experience.

The unit method made it possible to carry out work on a flow line basis and in many instances -- using parallel flows. For example, ground work was carried out simultaneously in connection with foundations, technological equipment, water ling tunnels and other underground installations. The zero cycle of the ESPTs /elektrostaleplavilnyy tsekh; electric steel smelting department/ was carried out in two stages: metal columns and crane beams were installed as the foundations were prepared. The unit installation of metal structures and equipment was carried out. Units weighing up to 50 tons were used for assembling the framework for hopper span shelving. The covering structures were assembled using spatially consolidated units measuring 36 X 12 meters and weighing up to 45 tons.

In the erection of the rolling department, use was made of the conveyer line method for installing the metal structures of the covering, with the installation of roofing. Earlier the roofing units for such installations were installed "on high," with laborious "precision" work required on the part of steeplejacks. Here the roofing elements were assembled on the ground at special stands, where electrical and ventilation equipment were immediately available and a roof was covered using 55 ton units. The creation of such a conveyer line increased labor productivity by more than twofold.

Water tower structures were installed using spatial and flat units and the tanks -- sheet steel drums assembled on a stand. The weight of an installed

unit -- up to 30 tons. Consolidated units were used for the sealing of water lines. Monolithic concrete floors were installed using the vibration-vacuum method. The pneumatic-concreting method was employed for installing the walls of reservoirs. Progressive joints with high strength bolts were used to install the structures of the ESPTs, the rolled steel shop, and other units. Anchor bolts were used for the installation of technological equipment, with the vibration-chalking method being employed with drilling of the openings using a diamond instrument.

The use of powerful crane equipment -- SKR-1500, BK-1000, SKG-100, SKG-63, MKGS-100 -- made it possible to carry out the work at rapid rates and without the use of supports, heavy tonnage elements or structures weighing up to 110 tons. Frozen ground was worked using highly productive bulldozers equipped with effective rippers. Use was also made of motorized concrete pumping and mixing units with a productivity of 60 cubic meters per hour, powerful scrapers and other items of modern equipment, all combined into complexes of equipment.

All of the above produced worthy results and the delivery of the pilot "Stal" complex served as a fine labor gift in behalf of the 27th party congress.

The "Principal Measures of the Ministry of Construction in the Far East and Transbaykal Regions for Accelerating Scientific-Technical Progress During the 12th Five-Year Plan and the Period Up To the Year 2000" were developed and approved by Minvostokstroy.

In the area devoted to improving industrial construction, a program is underway aimed at employing completely prefabricated building shells, the proportion of which is to be raised to 85 percent by 1990. This growth will be achieved by increasing the production of completely reinforced concrete structures and by expanding the use of light metal structures of complete delivery (LMK KP). The program for improving their structural solutions and creating the capabilities for their production has been in use since 1984, in collaboration with USSR Minmontazhpetsstroy /Ministry of Installation and Special Construction/ and USSR Gosstroy. This work must be completed in 1986 and by 1990 use of the LMK KP in subunits of the ministry must increase by a factor of more than 3.5, reaching 1 million square meters. The effectiveness of such structures is substantial: the construction schedules are shortened by 25-30 percent, output is increased by a factor of 1.4-1.7 (as a result of conveyor line assembly and unit installation), the weight of structures is lowered by a factor of 4-5 and a decrease takes place in the requirement for precast reinforced concrete.

A principal trend with regard to further industrialization is that of the active introduction of progressive structural systems involving the use of pre-stressed covering plates and structures made from high strength concretes. The use of protective structures is expanding noticeably -- "single-panel" covering plates and wall sandwiches. The plans call for organizing the production of complete-unit buildings of a special purpose nature: for the erection of purification installations, pumping and compressor stations, heating units and so forth.

In productive agricultural construction, emphasis is being placed upon the large-scale use of progressive variants for building shells, with use being

made of light weight structures of complete plant readiness, included in the Uniform Technical Conditions for the Planning of Agricultural Buildings. Coordinated with the client and USSR Gosstroy for use at construction projects of Minvostokstroy, these design solutions make it possible, compared to the traditional ones, to realize considerable economies in the use of concrete and metal and to reduce the labor intensiveness involved in the installation of production buildings.

Considerable funds (20-25 percent of the estimated cost and 30 percent of all labor expenditures for the erection of a building) are expended for the installation of footings and foundations. Moreover, the schedules for erecting them, under the conditions imposed by permafrost and high seismic conditions, are considerably greater than in the central zone. In order to reduce them, the ministry is carrying out the special purpose "Foundation" Program. For conventional soil conditions, more extensive use is being made of foundations made from progressive types of piles: pre-stressed without transverse reinforcement, pile-columns and so forth. The planned volumes to be introduced will make it possible to lower the cost for erecting foundations by 30 percent, the labor intensiveness of the work by 25 percent and to complete the zero cycles more rapidly.

In accordance with a program developed by the Institute for Permafrost Studies of the Siberian Branch of the USSR Academy of Sciences, NIIOSP /Scientific Research Institute of Foundations and Underground Structures/ imeni Gersevanov, LenZNIIEP and ZabaykalskpromstroyNIIProyekt, a series 1-464-VM apartment building was built in Yakutsk on columnar footings installed in alluvial soil. A check was carried out on variants of such foundations consisting of 5-meter piles and a new surface type of foundation for permafrost -- of plicated coverings. Analysis has underscored their high effectiveness. In particular the hydro-alluvial method is 1.5 to 3 times cheaper than the traditional method and much less labor intensive.

The technical level involved in the construction of housing and cultural-domestic installations is increasing and their quality and comfort levels are improving. Collectives of Minvostokstroy were awarded the prize of the USSR Council of Ministers for having erected civic buildings in an industrial variant on Kamchatka, a housing development in Vladivostok and theatres in Khabarovsk and Ulan-Ude.

The base for housing construction is being strengthened: in Chita, Sovetskaya Gavan, Komsomolsk-na-Amure and on Yuzhno-Sakhalinsk, large DSK's /house-building combines/ with a capability of 100,000 to 160,000 square meters annually were created. Today approximately 80 percent of the housing is being built using large panels.

The 1986 plan calls for the placing in operation, during the first 6 months, of not less than 40 percent of the overall area of apartment buildings, children's pre-school institutes and hospitals and prior to 1 July -- all general educational schools and professional institutes. The plans call for measures aimed at improving the appearance of cities and villages in a region and raising the architectural expressiveness of building systems and the quality of housing.

Jointly with Gosgrazhdanstroy, a long-range program is being carried out aimed at improving civic housing construction. What will this provide? The labor-intensiveness of the work will be reduced by 15 percent, metal expenditures by 10 percent and energy resource expenditures -- by 5 percent. An example of a practical solution for this task is the creation of the first cassette-conveyor line in the Far East at the Vladivostock KPD-35 plant. The line is characterized by the immediate striking of goods for the production of ceiling and interior wall panels. It is 1.5 times more productive than the traditional cassette conveyor line and its consumption of thermal energy per cubic meter of product is less by a factor of two. Such lines will be installed at other enterprises.

Old plans will be replaced by new ones. Today these plans are being used for erecting two thirds of all housing and the conversion of plants over to producing homes in accordance with the new plans will be completed during the five-year plan. Plans have been developed for apartment dwellings with up to 16 stories. Homes of an improved (83d) series are being erected in the Maritime Kray. Homes of the promising 97th series are also being erected in Khabarovsk Kray, the Buryat ASSR and in Sakhalin, Amur and Chita oblasts. These plans take into account the natural-climatic conditions of a region and the demographic requirements, they embody the principle of functional zoning and the homes are cozy and comfortable.

Homes of the 112th series, consisting of 5 and 9-story sections, will be produced by the Yakutsk DSK. A sector insert called for in the form of a grouping element makes it possible to turn a building from 22.5 to 90°. Thus it is possible to erect homes having a ring-shaped form. As a result, unique architectural ensembles will appear.

In 1984, a KPD [large panel plant for housing construction] with a capability for producing 50,000 square meters of apartment building space of the Mobil Series was placed in operation in Nikolayevsk-na-Amure. These buildings have a small product nomenclature and the number of marks has been reduced by a factor of 6-7. The apartments have storerooms, mezzanines, drying units and closets. The buildings have 3-meter high ceilings and a high degree of thermal protection for the exterior walls and windows with triple glazing have been employed for the very first time at construction projects throughout the kray. The series has 7 unit-sections and this makes it possible to diversify the architectural solutions for the microrayons by varying the groupings.

An improvement in the external appearance of the buildings will be carried out in accordance with the special purpose Fasad Program.

In order to raise the level of prefabricated construction for objects of a social, cultural and domestic nature, Minvostokstroy and USSR Gosstroy handed down a decision on converting over to the production of a more economic inter-specific large panel series -- 1,090. During the current five-year plan, enterprises of the construction industry of the ministry will commence producing structures of this series for regions having permafrost soils of both a seismic and non-seismic nature. The construction of schools and professional technical institutes is being converted over to industrial completely prefabricated operations. Plans have been developed and are being introduced

into operations for built-in and added-on buildings for trade and domestic services enterprises.

In carrying out the plans for the technical re-equipping of the branch, a considerable role is being played by a plant for the production of buildings and facilities of the container type, the construction of which is taking place on the outskirts of Khabarovsk. Its output is intended for the Young Pioneer bases of builders and for the erection of installations in the rural areas and also in undeveloped regions. The conveyor line of the new enterprise will produce module unit-containers, for use in the assembly of small apartment buildings and facilities of a domestic, cultural and production nature. They will be produced taking into account the conditions which prevail in the Far North. The capability of this enterprise, which must be placed in operation in 1987, will be 120,000 square meters of prefabricated facilities.

For the current five-year plan, the plans call for accelerated rates for developing the base of the construction industry. For example, the plans call for an increase in the capability for producing precast reinforced concrete of 2,200,000 cubic meters, including KPD parts -- 1,360,000 square meters, complete buildings of a productive nature -- 400,000 cubic meters, carpentry products -- 1,600,000 square meters and porous aggregate fillers -- 1,390,000 cubic meters.

A program has been developed for utilizing the natural volcanic pumice of the Ilinskiy deposit in Kamchatka Oblast. The all-round use of such pumice in the structures of buildings of an industrial and housing nature will make it possible to lower the weight of buildings by an average of 30 percent and to realize a considerable economy in the use of reinforced steel. This pumice will be used for the production of light aggregate with a bulk density of 400-450 kilograms per cubic meter.

In Khabarovsk Kray, on Kamchatka, in Chita Oblast and in the Yakut ASSR, the production of protective structures is being organized based upon the use of effective heaters -- expanded polystyrene and a special panel of increased strength and a new material developed by the ministry's specialists -- plastiprin, which in particular provides a substantial reduction in expenditures through the use of local materials (slag, sand and others) as component elements. Special resins used for anti-corrosion protection and for the hermetic sealing of structures (economic effect -- 4 rubles per square meter) were developed using Far Eastern pit coal.

In the area of production mechanization and automation, attention is being concentrated on those laborious processes and operations which require a high proportion of manual labor. Technological assemblies are being produced on a centralized basis at plants of the Vostokremstroymash Trust and such production has been in progress since 1980. Today the requirements for such assemblies are being satisfied by only 50 percent; the task has been assigned of raising this figure to 73 percent by 1990.

Priority importance is being attached to increasing the proportion of the pool of resource conserving equipment having great individual capability and capable of operating under extreme conditions. For example, powerful bulldozers equipped with effective rippers are being employed extensively for working rocky

frozen soil. No longer is there a need for warming the soil and this fact alone has resulted in a considerable fuel savings and it has made several hundred workers available for other types of work. Both independently and also in collaboration with foreign firms, the ministry is searching for the means for producing and creating such equipment. In particular, the production of powerful drilling and drilling-crane machines and concrete placers has commenced.

Over the past five-year plan, Minvostokstroy mastered the production of 17 types of new and highly productive equipment. Since 1983, robots and manipulators have been introduced into operations. A catalog has been prepared for this equipment; it contains recommendations for using it in conjunction with definite processes. In addition, an all-round program for the introduction of this equipment has been developed and is now being implemented.

During the 12th Five-Year Plan, the plans call for the automation of all concrete mixing units based upon the Tsikl-BS pneumatic control system (productivity increasing by 17 percent), the introduction into operations of 150 inventory BSU's of the VAA-40 type (economic effect of the unit -- 26,000 rubles). Approximately 500 robots and manipulators will be employed for carrying out hoisting-transport, hardware-welding and painting operations and for performing metal-working and other types of operations. Laser systems of the SAUL-1 type will be approved for operations; they will be employed for controlling the working organs of earth-moving machines, a ShBM-150 manipulator for the cutting of metal, robots of the KM10Ts.42.02 type for the stamping of parts and so forth.

In the work concerned with accelerating scientific-technical progress, special emphasis will be placed upon raising the effectiveness mainly of internal operations. However, it is obvious that today's large-scale tasks cannot be solved based only upon the efforts of the ministry. Business-like support must also be provided by allied workers: machine builders, chemists, metal workers. In short, all branches concerned with the common task -- capital construction.

The first year of the 12th Five-Year Plan has now commenced. The branch must now perform in a high quality manner and more productively with fewer expenditures. In solving these tasks, scientific-technical progress is the chief lever for improving production.

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CSO: 1821/130

NEW DECREE SETS STANDARDS FOR CAPITAL CONSTRUCTION ORGANIZATION

Moscow PROMYSHLENNOYE STROITELSTVO in Russian No 2, Feb 86 pp 13-16

[Article by A. A. Lysogorskiy, chief of the department of standards and regulations for construction production, Glavtekhnormirovaniya, USSR Gosstroy; Ye. A. Dolginin, candidate of engineering, director; V. V. Shakhparonov, candidate of engineering, deputy director; L. P. Ablyazov, candidate of engineering (TsNIIOMTP) [Central Scientific Research, Planning and Experimental Institute of Organization, Mechanization and Technical Assistance to Construction]: "New Standards and Regulations for the Organization of Construction Production"]

[Text] The new SNiP [Construction Standards and Regulations] 3.01.01-85, "The Organization of Construction Production," which was approved by USSR Gosstroy (Resolution No 140 of 2 Sep 85) effective 1 Jan 86, is devoted to improving the organization of construction production and its technological discipline; further industrialization of construction; the quality of construction and assembly work and the timely placing into operation of production capacities and facilities.

This document contains standards and regulations, the mandatory observation of which by all participants in the construction of new and the expansion and reconstruction of existing enterprises, buildings and facilities, will make a fundamental improvement in the organization of construction production, as demanded in recent years by decrees from the CPSU Central Committee and USSR Council of Ministers on capital construction and the decision of the June 1985 CPSU Central Committee conference on questions of accelerating scientific and technological progress.

This standards document was developed by TSNIOMTP, USSR Gosstroy, with the participation of VNIPI [All-Union Scientific Research and Planning Institute of Labor in Construction]; NIIES [Scientific Research Institute of Economics of Construction]; the Promstroyproyekt [probably industrial construction planning] Institute; Proyektnyy [Planning] Institute No. 2; TsNIIpromzdaniy [Central Scientific Research, Planning and Experimental Institute of Industrial Buildings and Structures], USSR Gosstroy; NIIMS [Scientific Research Institute of Economics and Organization of Material-Technical Supply], USSR Gossnab; NIISP [Scientific Research Institute of the Construction Industry] UkSSR Gosstroy; VNIIST [All-Union Scientific Research

Institute for the Construction of Trunk Pipelines], Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises]; TsNIIS [All-Union Scientific Research Institute of Transportation Construction], Mintransstroy [Ministry of Transport Construction]; Giproorgselstroy, USSR Minselstroy [Ministry of Rural Construction] and the Orgenergostroy Institute, USSR Minnergo [Ministry of Power and Electrification], in accordance with the new system of standards documents in construction, SNiP 1.01.01-82*; SNiP 1.01.02-83 and SNiP 1.01.03-83*, effective 1 Jul 83, to replace the chapter of SNiP III-1-76 on "Organization of Construction Production;" the instructions on development of plans for the organization of construction and plans for production SN 47-74; and the instructions for the organization of operational-dispatcher control of construction production, SN 370-78.

The structure of the SNiP includes 10 sections with a collection of necessary enclosures. Each section includes appropriate requirements concerning, besides general provisions, the preparation of construction production; documentation on the organization of construction and the production of work; material and technical support; mechanization and transport; organization of labor; ensuring the quality of construction and assembly work; operational and dispatching management; the organization of construction production under conditions of facility reconstruction; and environmental protection.

The SNiP was developed based on the analysis, critical assessment, reexamination and existing practice of the use of all-union, republic and departmental standards documents in this field. It takes into account advanced experience of Soviet and foreign construction projects, as well as projects built in the USSR with the participation of foreign firms, including the Svetogorsk Cellulose Paper Combine and the Kostomuksha GOK [Mining and Concentration Combine] (Administrative Department of Finn-stroy, Finland); the Belorussian Metallurgical Factory (of the Fest-Alpine Firm, Austria) and other planning organizations, and takes into account office mechanization construction work. During the process of developing and preparing this document for approval a draft was thoroughly examined by the construction ministries, departments, and Gosstroy offices of the union republics, as well as by a specially created commission of USSR Gosstroy, with the participation of representatives of its structural elements and construction ministries.

The SNiP for the first time set standards which regulate questions of a fundamental nature at this stage of the development of construction for standardizing the organization of construction production and introducing highly effective organizational and technological solutions.

The standards and regulations of the SNiP are oriented toward a single-minded purposefulness of all organizational, technical and technological solutions to achieve the final main result -- the placing into operation of the facility in the established time periods, with high quality and other technical and economic indices of construction, both of the individual facility, and of the production economics activity of the contracting construction organization which is carrying out its construction. It is emphasized that the construction of each facility can be carried out only based on decisions worked out in advance on the organization of construction and technology of production of the work, which must be approved in the plan for construction

organization and plans for the production of the work, with mandatory working out of variant basic decisions and calculating the comparative effectiveness of the variants, and the selection of the best variant in accordance with the approved criterion (adjusted expenditures, labor intensiveness, duration of construction).

The following are mandatory conditions which must be ensured in the organization of construction production:

- coordinated work by all participants in the construction of the facility, with the coordination of their activity by a general contractor, the decisions of whom on questions related to the fulfillment of approved plans and work schedules are mandatory for all participants, regardless of their departmental subordination;

- the comprehensive delivery of material resources from the crew for the building, structure, unit, sector, section, floor, story and room in the time periods provided for by calendar plans and work schedules;

- the erection of buildings, structures and their parts by industrial methods, based on the extensive use of structures, articles, materials and equipment delivered in sets, sets of factory manufactured units, as well as the purposeful extension of technological specialization and the use in construction of combined organizational forms of management, based on the effective combination of industrial and construction production;

- the accomplishment of construction, assembly and specialized work by the flow line production method, with the observance of technological sequence and technically based arrangement across the working area and in time, and with extensive use of brigade cost accounting; high caliber introduction of construction and assembly work and strict observance of safety equipment regulations;

- observance of environmental protection requirements.

Conditions for fulfillment of work which is of a seasonal nature are regulated, including preparatory work, at the most favorable time of year in accordance with the decisions of the plan for organization of construction, for the purpose of saving labor, material-technical and fuel and energy resources.

The SNiP requires the purchaser, before the start of production of work on the construction of the building or structure, to formulate and transfer to the contracting construction organization authorization for the production of construction and assembly work. Requirements are included on the observance of strict technological sequence in the production of the project; on the conditions under which it is permitted to begin the main work of constructing the facility or a portion thereof; on prohibiting the start of work to erect above ground construction of the building (structure) or a part (section, span, story, sector, clamps, etc.) before the complete conclusion of the construction of underground structures and backfill of foundation pit holes and trenches, including packing the earth to its natural state of compactness

or that stated by the plan, if there are no special instructions on this in the production plan; and on the conditions in which intra-site preparatory work can be begun in cases when the construction site is located on territory subject to the influence of unfavorable natural phenomena and geological processes (settling, snowslides, landslides, avalanches, marshiness, high ground water).

For the first time in a document of standards the very important requirement is levied that completion of preparatory work both within and outside of the site, in an amount which provides for construction of the facility in the planned time periods, must be confirmed by a special document, formulated by the purchaser and the general contractor, with participation of the subcontracting organization which is accomplishing the work during the preparatory period and the trade union committee of the general contractor's construction organization. This means that both the engineer preparation of the construction site for the production of the main work, and its readiness from the standpoint of the creation of appropriate working conditions for the workers (cultural and everyday services for them, providing the working brigades with construction materials, machinery, standardized sets of tools, etc.) must be confirmed by this document.

The standards document more decisively regulates the use of the nodal method. Thus, all facilities with an estimated cost for construction and assembly work of 20 million rubles or more, in which technological nodes can be segregated, must be built by the nodal method, which provides for separating the facility into interrelated nodes, the technological readiness of which, after the completion of construction and assembly work makes it possible autonomously, irrespective of the readiness of the facility as a whole, to carry out adjustments and testing of aggregates, mechanisms and apparatuses.

When the nodes are segregated in the construction organization plan the calendar time periods for the construction and delivery of equipment and structures and the requirement for material and labor resources and means of mechanization must be defined. Also, diagrams which divide the facility into nodes and list them and their composition must be worked out in addition, as well as the technological interrelationship of the nodes and their energy supply and a comprehensive, consolidated nodal system schedule.

The requirement is established, in the erection as part of a facility of standardized and often repeated buildings, structures and their parts (water heaters, compressors and pumping stations, transformer substations, transport culverts, built-in spaces and others contained in different enterprises), as well as during the assembly of production lines, aggregates, assemblies and engineer equipment, to provide for accomplishing the maximum amount of work outside of the construction site by unitizing equipment and designs into sets at supplier factories, prefabricated assembly enterprises and construction industry bases, and their delivery in the form of unit sets for construction. The basic regulations are set forth for the organization of construction production using the prefabricated unit set method.

Nevertheless, despite the fact that the question of the use of new progressive and effective methods for the organization of construction and reconstruction

of facilities has received sufficiently strong regulation in the standards document on the organization of construction production, their effective influence on construction production cannot be ensured until the decision on their mandatory use is applied and implemented at all stages of the creation of a facility -- planning, design, preparation, organization and management of construction.

Therefore, requirements concerning the mandatory use in planning and construction of the prefabricated unit set method for construction of facilities, and the nodal method for construction of complex facilities and major industrial complexes must first be included in the basic planning document (SNiP 1.02-85), "Instruction on the Composition and Procedure For the Development, Coordination and Approval of Planning Estimates For Construction of Enterprises, Buildings and Facilities," which must regulate the procedure for the planning of facilities with the use of these methods, beginning with tasks for planning and the technological part of the project and concluding with the development of construction working drawings and estimates.

An area is established for the conduct of jobs by mobile construction formations, equipped according to the job profile with transport, mobile mechanized assemblies, power supply facilities and mobile (packaged-unit) buildings, as well as for use of the shiftwork method of construction organization, which provides for the accomplishment of jobs by regularly rotated elements from construction organizations which are located in populated areas.

Jobs which require specialized equipment and appropriately trained cadres are to be carried out, it states in the SNiP, primarily by specialized construction organizations.

On the whole, the SNiP devotes substantially more space than before to standards and regulations for the preparation of construction production. This is because of the particular importance of this question for successful construction of the facility. Standardized requirements are systematized, based on the purpose for the preparation of construction production. This purpose is that preparation of construction production must ensure systematic development of construction and assembly work and interconnected activity by all participants in construction of the facility, and must include the conduct of general organizational and technical preparation, preparation for construction of the facility, preparation of the construction organization and preparation for the production of construction and assembly work. The SNiP regulates the content of each of these enumerated types of preparation, strictly unifies the measures and work, and sets forth regulations for making effective decisions. It should be noted that standardized requirements are characterized by commonality for all capital construction, regardless of the specific branch of the construction facilities and, thereby, pursue the aim of putting into operation a system of construction production preparation which is unified within the branch, and making it mandatory.

The importance of this question requires its further standardization, concluding with its transition to state standards for the individual, most key questions in this area.

As is known, the existing SNiP III-1-76 contained only a reference to the separate instruction SN 47-74 on the development of plans for the organization of construction and plans for the production of construction work. The new SNiP includes directly all standards for the composition and content of POS [construction organization plans] and PPR [work plans], and it takes into account the need to ensure the continuity of these documents and especially emphasizes their importance for the successful organization of construction production and the effective fulfillment of construction and assembly work. The requirements were substantially increased for the composition, content and quality of working out POS and PPR on questions associated with the use of the prefabricated unit set, nodal and other effective methods of construction; the organization of construction production under conditions of reconstruction of existing enterprises; the development of a network of intra-farm roads to service agro-industrial complex facilities; the construction of facilities in stages; comprehensive development of residential housing areas and micro-rayons, including city design complexes; the construction of main-line structures, hydraulic engineering and water management facilities and mining enterprises for the extraction of minerals; the construction of facilities under harsh climactic conditions and other questions.

It is especially necessary to emphasize the standard which forbids the carrying out of construction and assembly work without an approved construction organization plan and project production plan, and does not permit deviations from the decisions made in these plans without coordination with the organizations that developed and approved them.

The new questions first regulated in the all-union standards document on the organization of construction production include that of developing documentation on the organization of the production program of the construction organization during the plan period. This very topical question has repeatedly been raised and discussed on the pages of the journal PROMYSHLENNOYE STROITELSTVO. In the final analysis, the successful implementation of the annual, two-year and five-year plans for contract work by construction and assembly organizations depends on its resolution. In reality, the production program of the construction organization (trust, construction administration, production construction and assembly association, and others) includes, as a rule, from several dozen to hundreds of separate buildings and structures, which are included or are not included in the makeup of individual enterprises, residential areas, micro-rayons and other complexes which are included in the construction organization's plan for contract work based on internal lists of construction project titles for numerous separate purchasers.

Providing each individual construction project, under these conditions, with labor resources specialized by professions and types of jobs, construction materials, structures, parts, equipment and fuel and energy resources in the necessary amounts and when actually required entails great, and sometimes insurmountable difficulties. Individual project production designs do not resolve the task of balancing resources for all facilities, but view each individual facility separately, in isolation from the others. As a result, the construction organization does not systematically fulfill the plans for

the projects and for the introduction of production capacities and facilities in the established time periods, and worsens the other technical and economic indices of its economic production activity.

The task of developing documentation to eliminate these shortcomings has repeatedly been posed and is posed by scientific research, planning and technological and construction organizations, and by individual authors, and various methods of solving this tasks have been and are proposed. And now, finally, for the first time in an all-union standards document, SNiP 3.01.01-85, "The Organization of Construction Production," USSR Gosstroy included a standard requirement that during the preparation of a construction organization to accomplish a project, plan documentation be developed on the organization of projects for its annual (two-year) production program, coordinated in terms of time periods for the construction and the supply of labor, material-technical and energy resources, as well as the means of mechanization of all facilities provided for in the production program (points 2.4; 3.13 and 5 of Appendix 4 to SNiP 3.01.01-85).

The SNiP instruction permits refining the composition and content of this documentation, depending on the specific activity of the construction organizations; the planning decisions by the facilities; the development method applied; the economic and mathematical methods and computer resources used, and other conditions. However, it establishes that this documentation must be based on the following:

A calendar plan (consolidated) for the construction of all facilities of the annual (two-year) production program of the construction organization, with the establishment of sequentiality and the time periods for continuous accomplishment of projects, and their interrelationship in time, for the purpose of achieving full utilization and rhythmic work on the part of the production elements of the construction organization during the plan period;

Notification (consolidated) of the delivery of technological sets of construction materials, parts, structures and engineering equipment to the facilities of the annual (two-year) production program of the construction organization, linked with the work of the production elements and with the time periods for the erection of individual buildings, structures and parts thereof, and the fulfillment of individual kinds of work.

Thus, the long urgent need to regulate the different forms and methods of solving tasks of creating an optimal construction list of the numerous facilities of the production program of the construction organization, found in construction practice, with the introduction of these requirements receives, finally, the "rights of citizenship," and these very forms and methods can be improved further on this basis.

For the purpose of improving the responsibility, including personal responsibility, for the quality and reliability of plan decisions and the information about the quantities of work, the time periods for construction, and the need for material and technical resources, the SNiP requirements make it necessary to coordinate the forms of the main plan documents (Form 1 -- "Calendar Plan For Facility Construction;" Form 2 -- "Notification of the

Amounts of Main Construction, Assembly and Special Construction Projects;" and Form 3 -- "Notification of the Requirement for Construction Structures, Articles, Materials and Equipment") with the purchaser and the manager of the contracting construction organization, and with the drawing up of appropriate signatures on these documents by officials from the purchaser and the general contractor. The list of construction structures, articles, materials and equipment included in Form 3 (Column B) was compiled applicable to their consolidated lists, provided for in the departmental requirements for materials (VM), developed as working construction drawings in accordance with GOST [All-Union State Standard] 21.109-80, and coordinated with USSR Gosstab.

The new standards on the content and composition of planning decisions and documentation in project production plans require, in contrast to the requirements of SN 47-74, which permitted the development of the project production plan at the enterprise, its individual lines or the overall complex under construction, that the project production plan, depending on the time period for construction of the facility and the amount of work to be accomplished by the construction organization, be developed for the construction of no more than an individual building or structure as a whole, for the erection of its individual parts (underground and above ground parts, sections, spans, stories, floors, etc.), for the accomplishment of individual technically complex construction, assembly and special construction jobs and jobs accomplished during the preparatory period and that it be transferred to the construction site two months before the beginning of the erection of those parts of the building (structure) or the beginning of the accomplishment of those projects for which the production project plan was compiled. Such "disconsolidation" of PPR is sensible, since many years of practice of working in this area, including of trusts (institutes) of Orgtekhstroy (Orgstroy) confirms that the project production plan for an enterprise or complex of buildings and structures is in fact not being developed and does not exist as a unified whole.

A regulation has been introduced in accordance with which POS and PPR, during construction under difficult climactic and geological conditions, as well as during the erection of unique buildings and structures, must, in the process of construction, provide for special measures to ensure the durability and stability of the building's structures and facilities which exist or are being erected. It is also required that the plan for the organization of construction reflect the advanced development of the production base of the construction organization and the construction of residential and social facilities and public utilities, required not only for the needs of building the given facility, but also to support operational cadres.

The SNiP requires that contracting organizations which are working on general contracting and subcontracting agreements and purchaser organizations support the facility under construction with all types of material and technical resources in strict accordance with the technological sequence of production of construction and assembly work, in the time periods set by the calendar plans and construction schedules. Emphasis is placed on the regulation governing the organization of material and technical support of the facility being built, based on the technological production equipment list, under which the delivery of construction structures, parts, materials and engineer

equipment must be carried out through the use of technological sets, strictly linked with the technology and the time periods for the production of construction and assembly work. In accordance with the SNiP requirements, buildings, structures, assemblies, sectors, sections, stories, floors and rooms are furnished with the necessary material and technological resources (regardless of the sources and the order of their arrival). The higher level of technological preparedness of articles, materials and engineer equipment, as well as the delivery to facilities under construction of structures, parts, materials and equipment is carried out in sets, which contain the necessary inventory of holders, fasteners and other corresponding ancillary materials and products, ready for use.

Standards and regulations in the area of mechanization and transport in construction regulate issues concerning the comprehensive mechanization of construction; assembly and special construction projects; the use and content of standardized sets and small mechanized resources in accordance with the technology of the project being accomplished; special features of the mechanization of construction and assembly work during reconstruction of existing enterprises under constricted conditions; effective forms of organizing the operation of small mechanized resources; and the organization of the work of transport and delivery to facilities of mass construction goods, with the use of appropriate means of containerization and packaging.

The requirements for labor organization presented in the SNiP are aimed at the application of highly productive methods and techniques of labor in accordance with the project production plans, technological charts and charts of labor processes; the timely delivery to each brigade (element) in the working area and uninterrupted supply to the workers of material and technical resources and the necessary complement of technical supplies; the use of progressive forms and systems of wages and labor incentives; and expanded use of brigade cost accounting.

In the SNiP the standards associated with ensuring quality stem from the fact that high quality and reliability of buildings and structures must be provided by construction organizations through implementation of a system of technical, economic and organizational measures for effective control at all stages of the development of the product under construction. A regulation has been introduced in accordance with which monitoring the quality of construction and assembly work must be carried out by special services, created in the construction organizations and equipped with technical resources which ensure the required reliability and completeness of monitoring.

The composition and content of production control over the quality of construction and assembly work and the order in which it is carried out are regulated. A special place is devoted to the requirement for inspection of concealed work and the acceptance of crucial structures, including the compilation of appropriate documents when erecting complex and unique facilities. The form of the documents is found in the appendix. Selective inspections are required at all stages of construction, for the purpose of checking the effectiveness of previously accomplished production control. These inspections must be carried out by inspection services, if they exist in

the construction organization, or by commissions specially created for this purpose.

A requirement has been introduced which provides for working out measures, based on the results of production and inspection monitoring, to eliminate disclosed defects, taking into account the remarks of authors' supervision of the planning organizations and those of the organs of state supervision and control.

The new SNiP includes requirements which regulate the organization of the operational dispatching administration. It instructs that this administration is an integral part of the organization of construction production and is included in the overall system of construction management, and must facilitate the timely fulfillment of construction and assembly projects, in technological sequence, in accordance with the plans and schedules, by continuous control over the fulfillment of projects, their continuous calculation and regulation, and enterprises supplying construction materials, structures and parts.

The functions of the dispatcher service are set down and enumerated. Regulations are introduced under which, in areas of construction of major industrial complexes and when building large residential areas, upon the mutual agreement of the participants in construction, a combined dispatcher service may be created, and when reconstructing existing enterprises, combined dispatcher services of the construction organization and the management of the enterprise under reconstruction may be developed.

It is especially important to discuss the requirements of the standards for the organization of construction production under conditions of the reconstruction of facilities. The existing SNiP III-1-76 only indicates the necessity to take into account certain special conditions for the transport of materials and the use of equipment when accomplishing reconstruction work at existing enterprises. The new SNiP 3.01.01-85 contains a special section concerning the reconstruction of enterprises, buildings and facilities, which is the main thrust in the creation of new and further development of existing capacities in all branches of the economy and industry. Particular attention is devoted to the fact that thorough and all-round study of the technical state of existing enterprises must precede projects pertaining to their reconstruction, and the projects themselves require particularly careful preparation and control of joint actions by the purchaser, contractor, designers and suppliers of equipment and prefabricated structures and parts.

It is required that construction and assembly work accomplished during reconstruction of facilities be closely linked to the production activity of the enterprise under reconstruction. The client and the contractor are required to determine a procedure for coordinated actions and are responsible for the operational management of the projects, and decisions about the organization of construction production must ensure the fulfillment of the maximum possible amount of construction and assembly work before the time that the enterprise must cease operations and during planned technological stoppages in the main production. One of the necessary conditions is the joint use of intra-factory transport lines of communication and engineer

networks and shop load-lifting equipment by construction and operating enterprise personnel.

A regulation has been introduced under which the client and contractor, jointly with the general planning organization, must coordinate the amounts, technological sequence and time period for fulfillment of construction and assembly work, as well as the conditions of their integration with the work of the production shops and sections of the enterprise which is under reconstruction. A procedure for operational leadership has been determined, which includes actions by construction personnel and operating personnel in the event that emergency situations arise. The sequence for dismantling of structures has been determined, as well as that of dismantling or transferring utilities systems and the locations and conditions for turning on temporary water supply, electric power supply and other systems. A list is compiled of the services of the client and his technical equipment which may be used by the builders while reconstruction work is in progress.

All of the decisions for the organization of construction production must take into account the need to protect the environment. In this regard, the new SNiP establishes more extensive requirements than before concerning taking measures and carrying out work to recultivate grounds, prevent the loss of natural resources and prevent or clean up harmful wastes discharged into the soil, watersheds and atmosphere, and to preserve wildlife and vegetation.

Overall, the new standards document, which organically combines in a single entity both the general standards and regulations for organization of construction production, and specific requirements for the developmental procedure, composition and content of planning decisions and documentation in construction organization plans and project production plans, will help to improve the effectiveness of these documents and their influence on the introduction of progressive organization of construction and the technology for accomplishing construction work; introduction of advanced labor methods; improvement of operational planning and management of construction production; and improvement of the technical and economic indices of construction, both of individual facilities and of the production and economic activity of the country's construction organizations.

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CSO: 1821/140

SINGLE INVESTMENT SYSTEM FOR CAPITAL CONSTRUCTION URGED

Moscow EKONOMICHESKAYA GAZETA in Russian No 5, Jan 86 p 7

/Article by V. Borodin, department head at Council for the Study of Productive Resources of USSR Gosplan and Yu. Fomin, deputy chief of a sub-branch of USSR Gosplan: "Instrument for Planning"/

/Text/ In the draft new wording for the CPSU Program and the Basic Directions, emphasis is placed upon the fact that the most important task of the central organs of administration is the practical implementation of a single scientific-technical, structural and investment policy.

It is our opinion that special importance is now attached to ESPKS /yedinaya sistema planirovaniya kapitalnogo stroitelstva; single system for the planning of capital construction/, which is being developed by USSR Gosplan and other central departments of the country, with the participation of USSR ministries and departments and the councils of ministers of union republics. The purpose of the system is the development of balanced and complete plans for capital construction based upon the extensive use of information resources and computer equipment.

What is the basis for the belief that this newly created system is serving its intended purpose?

First of all, a single information base distributed by national economic administrative levels and based upon electronic systems for the processing of data is being created within the ESPKS framework. It will make it possible to convert over to a basically new and progressive technology for the development of plans. For example, document circulation can be reduced by a factor of 1.5-1.8 and labor expenditures associated with the formation of planning documents by 70-80 percent. As a result, it will be possible to release more than one third of the administrative workers attached to construction administrations of ministries and departments.

Secondly, the system is aimed at solving a number of key problems associated with implementing improvements in planning. Thus, the normative methods will be further developed and the effect of a plan for accelerating scientific-technical progress will be strengthened.

Thirdly, the problem of strengthening interrelationships with respect to long-term forecasting and future and current planning is being resolved in a

constructive manner within the framework of the system. An approach is being employed which makes it possible, from common methodological positions, to develop programs for the development and disposition of branches and productive forces and also plans for capital construction.

Fourthly, the system promotes a strengthening of centralized management of the national economy and an increase in the role and responsibility of USSR Gosplan. The interaction of this system with all state plans of the union republics and with ministries and departments is ensured.

Unfortunately, the experience in developing the ESKPS underscores the insufficiently high level of executive discipline. The forces of inertia with regard to reorganizing the staff operations of ministries and departments are making their presence known. But the chief reason derives from the low effectiveness of the existing mechanism for controlling the creation of this inter-departmental system. The decisions concerned with this program must be obligatory for all of the ministries and departments. This is particularly true in view of the fact that during the 12th Five-Year Plan a conversion must be carried out from developing the system to introducing it into operations.

In this regard and in connection with the 2d section of the draft Basic Directions, following the statement "to raise capital construction to a new level from the standpoint of quality," we recommend inclusion of the following statement: "the planning of actual production and new construction as a single entity to be carried out based upon the use at all administrative levels of a single system for the planning of capital construction" and in the 3d section of the text for Paragraph 9, to add the following phrase: "To ensure the introduction of a single system for the planning of capital construction."

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CSO: 1821/135

PROBLEMS OF LENGTHY, UNFINISHED CONSTRUCTION

Moscow IZVESTIYA in Russian 9 Feb 86 p 2

[Article by V. Romanyuk, Kalinin: "Paradoxes of Long-Term Construction"]

[Text] Formerly the buildings of the Kalinin Khimvolokno Association named V.I. Lenin were located far beyond the city's borders. Today the city is approaching closer and the situation must be tolerated. Production work concerned with the removal of carbon bisulphide from rejected materials was included among the underway projects for 1985.

The 1st deputy chairman of the municipal executive committee O. Ilchanin and I visited the desolate construction site and we saw the air conditioners which lacked air ducts and the roof which still remained unfinished since summer. And where were the brigades for this underway complex? This strange question would be answered for us at other underway projects.

"An underway schedule of the work hung on my wall," stated the chief of the sector Ye. Uvyakov, not without some bitterness. "I had to remove it or the personnel would laugh. Up until summer the work was carried out at a fine tempo and subsequently reductions in the work effort were noted. There are many underway projects in the city and not all of them are being managed in the manner required."

It would seem that long-term construction is not profitable for anybody. The chemists are deprived of the opportunity to commence new production projects and Stroybank imposes sanctions on builders for having exceeded the normative construction schedules. However, many of those with whom I held discussions stated that it is still an easy matter to obtain money even though the lion's share will be plowed into the ground. In Kalinin Oblast, as in any small town, there are 2-3 small construction organizations -- Oblmezhkolkhozstroy, Selstroy, Kaliningrazhdanstroy. And each one has its own list of long-term construction projects. Would it not be more wise to merge them and to concentrate resources on the more important sites? Moreover, a strong organization that is capable of carrying out 2-2.5 million rubles worth of construction-installation work annually can more easily create and develop a base for mechanization and build a solution unit and a cement warehouse. The low capability of subunits today leads only to a dispersion of resources and, as a result, the amount of unfinished construction is multiplied. If we were to summarize all of the requests for construction in Krasnyy Kholm, Vyshniy

Volochek and in any other city in Kalinin Oblast, the total would exceed the capabilities of the local PMK's /mobile mechanized columns/ by a factor of 3-4. Naturally, the plan for them would be excessively tense. And in order to take care of the assigned projects in terms of money, it would be necessary to undertake new construction projects, to utilize resources on profitable operations and actually to once again plow considerable resources into the ground.

But everything appears differently from a bureaucratic window in Moscow. The ministries generally pay very little attention to money when the question concerns new construction. To the contrary, they lower the estimated costs in the plans in every possible way if only to be able to acquire the site. If only the work would commence! The logic is simple: if the work is started, it will be completed at some time or another. Once financing becomes available, there will be resources, staffs and bonuses. And this psychology for long-term construction is transmitted to the site. In the absence of real plans, the personnel are forced to seek out and find less laborious and better paying work.

And laborious plastering and finishing off work is put off until "later." Thus we see unused boxes and discarded departmental spans.

In 1985, in Kalinin Oblast, 12 large-scale construction projects were started. On the average, each one of them diverted one percent of the capital investments. This would appear to be a small amount. But during this same year the proportion of unfinished construction increased from 73 to 77 percent, thus exceeding the normative level to a considerable degree. In the oblast statistical administration, there was a simple explanation: work had started on the second complex of the Kalinin AES /atomic electric power plant/ and hence there was temporary growth in "unfinished construction."

I visited the site together with the chief engineer of the UKS /administration of capital construction/ of the municipal executive committee Ye. Sokolov, where the Volga Hotel is being erected. When one takes into account the fact that the development of a hotel economy in Kalinin is lower by twofold than the average level for the republic, it must be admitted that a new construction project would very much aid in finding a solution for the problem. But here we find a familiar picture: at the end of December, not a soul was to be found at the installation.

"The fears appeared in August," stated Yevgeniy Aleksandrovich. "There were many projects involving large volumes of plastering and finishing work. Some thought was given to eliminating the restaurant and turning over only the habitable portion. But later even this variant was rejected. And what happened subsequently? There were very few bricklayers in the city and yet a school and later a maternity home had to be placed in operation prior to September 1986."

Thus, once again a question mark hangs over the project in which 3 million rubles were invested. Was it not possible, when preparing the plans, to take into account the situation with regard to bricklayers or to ensure that the construction project was supplied with equipment and all other conditions satisfied? It was possible and it should have been done. It bears mentioning that in the Kalinin organizations the draft plans for leading contractual organizations are examined in a very fault-finding manner. However, the oblast's recommendations are often ignored in the central departments. For

example, the Kalinin Territorial Construction Administration of USSR Ministry received a program for 1986 which exceeds by 20 million rubles the recommendations of the oblast plan and the true potential of the builders.

"I was forced to accept a plan with growth and an extremely substantial one," gloomily stated the chief of the territorial administration P. Vyazovchenko. "I did this in a conscientious manner. Otherwise, they would have lowered the work indicators for me. But we would have still lived through this. Another fact was somewhat alarming. According to our practice, the plan is ensured resources roughly in the amount of 85 percent. It turns out that with a true plan I am left without resources."

"Does this then mean that we must select more projects?"

"Certainly not. But it must be remembered that there are 77 clients and approximately 2,000 construction projects -- thus what kind of a flow line can there be? The construction industry issues on a daily basis structures for 1,000 square meters of housing space and not one meter more. It is assumed that the laying of foundations requires 1,500 square meters -- thus a disproportion is deliberately created. But we must proceed on this basis. In the case of several projects, Stroybank authorized us to bypass a number of accounting forms and to carry out the construction using our own flow line schedule, a schedule which provides freedom in the priorities and rhythm for introducing projects into operation. During the period of the experiment, unfinished construction was brought to the normative level, but subsequently Stroybank did not accept our schedules for financing. It maintained that such schedules were not authorized."

"And was it the same in the bank?" inquired the manager of the Kalinin office of Stroybank. "And did the builders ignore the real possibilities?" asked the deputy chairman of the oblast plan N. Ignatyev, as he joined in the discussion. "Insist, for example, that in 1986 they introduce into operations a medical institute and maternity home as public health installations. For one of the installations, 2 million rubles remain and for the other -- 1.2. Is this not unrealistic?"

"I can in no way agree with this handling of the question," objected the financier. "The project must be built in conformity with the schedules established for it. We are not authorized to proceed on the basis of 'realistic' disruptions."

The discussion ended at this point.

A visit to several underway projects in Kalinin Oblast served to acquaint me with one regularity: not every underway project can be considered as such. At some the required personnel resources, equipment and materials are truly being concentrated. At others there is a semblance of work only during the last 3-4 months of the year. There is then a spontaneous conformity to the norm for plans approved earlier at the level of the central planning and economic organs. The fact that these plans are far from realistic is well known to everyone in Kalinin Oblast. It is possible that they are even well known in Moscow, otherwise there would not be so many corrections being applied to logistical supply operations.

"Then for what reason is this confusion being created?" asked one reader. There is no such confusion. It is simply a matter of the initial plans containing everything that is desirable and the final corrected by life variant -- that which was truly achieved. It bears mentioning that it is also profitable for the client to classify more projects as being underway: it is then easier to obtain equipment for them from state supply organizations. For this same complex under construction, engaged in removing carbon bisulphide from rejected materials, more than 3 million rubles worth of equipment was obtained at one stroke. The "minor deception" succeeded and today the costly units are in operation at the site despite the fact that they are not needed.

Such a flow-line type of planning method can be harmful in one respect. But yet it is still vital. It engenders a conflict of departmental interests in which the losers are usually not apparent during the plan development stage, but in the final analysis everybody loses. Each department pushes forward its own requirements while giving no thought to the oblast's potential and it imposes unrealistic plans on its weak construction organizations, thus encouraging a dispersion of human resources, equipment and construction materials among a number of installations, the number of which for all practical purposes is not decreasing. There is still one other chronic disease -- a lack of desire on the part of important departments to invest resources in development of the production base in various areas. The number of long-term construction projects is increasing and the fact that they are under construction for an extended period of time results in many of them being abandoned after they are only half finished -- and this is advantageous for the plan. The builders have their own interests: they are paid wages depending upon fulfillment of the plan for construction-installation work or, in other words, based upon the volume of resources used. This encourages the undertaking of contracts for new projects, in an attempt to remove the "fat" from them as rapidly as possible. We have maintained for many years that the work of builders must be evaluated according to the final product -- the turning over of the key to a project. Nevertheless, in recent explanations given by the USSR Goskomtrud /State Labor Committee/, emphasis was once again placed upon the construction gross effort among other incentive measures.

Many of those with whom I spoke stated that the efficient organization of a construction flow line requires a single client. It could even be a soviet of people's deputies. At least for housing and social, cultural and domestic affairs. But then all capital investments for these projects must be withdrawn from the ministries and turned over to the soviets entirely for territorial planning. And finally, the entire economic mechanism must be built in a manner such that the interest of builders in their "gross" effort is overcome.

At various types of meetings today, one overhears discussions concerning the need for reorganization. But this must have to do with not only our notions of how the work is to be carried out but also with the work itself. Construction production, excuse the pun, is clearly in need of reorganization. The overcoming of habitual plans and approaches must be carried out in actions rather than in words.

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CSO: 1821/135

CONSTRUCTION PLANNING AND ECONOMICS

SIBERIAN FAR EAST CONSTRUCTION PROBLEMS

Moscow STROITELNAYA GAZETA in Russian 16 Feb 86 p 2

/Article: "Base for Acceleration"/

/Text/ The state, without skimping, has allocated resources for the social-economic development of the Far East region.

Nevertheless, the industrial base for the construction complex of the Far East is on the whole still being developed at low rates and is not satisfying fully the requirements. As a result, deficit materials are being imported from the western regions of the country and this is causing an unjustified increase in the volumes of railroad transport operations over the Trans-Siberian Railroad and increased construction costs.

The principal reason for this falling behind -- departmentalization. For example, 29 ministries and departments are engaged in the production of construction materials, components and structures. This is an obvious dissipation of resources.

An example of clearly expressed departmentalization is the plant for aluminum construction structures created in Khabarovsk based upon the last word in equipment. It belongs to the USSR Mintyazhstroy /Ministry of Construction of Heavy Industry Establishments/ -- a ministry which for over a period of a few years has not carried out any work in the Far East. Understandably, a considerable portion of its output has been for the western regions of the country. And indeed the situation would have been different if the plant had been transferred over to USSR Minvostokstroy /Ministry of Construction in the Far East and Transbaykal Regions/ or USSR Minmontazhstroy /Ministry of Installation and Special Construction Work/, which carry out a vast program of work precisely in this region. However...

During this present five-year plan, the volume of capital investments in the region will increase by roughly 23 percent. The development of the construction base must be accelerated. Thus the requirements for metal structures will increase by 37 percent, precast reinforced concrete -- by 58, wall materials -- by 50, cement -- by 48 percent. In the process, the client requirements must be satisfied mainly by means of local production. This is why we have proposed, in the draft Basic Directions, that emphasis be placed upon the need for leading development in the Far East not only of the fuel industry and

power engineering but also of the industry of construction materials, structures and components.

Let us take the production of cement. Within a period of 5 years, the Sakhalin and Magadan plants must be built. At the same time, it is our opinion that the Teplozersk plant in Khabarovsk Kray must be modernized, with its capability being increased by a factor of 1.5 and reorientation taking place towards the production of only high grade cements. The capability of the Novospasskoye Plant in the Maritime Kray will be raised by 1.2 million tons: an additional technological line will be installed here. Within a brief interval of time, the region's enterprises will be converted over to using the progressive "dry" production method.

By the year 2000, the fixed productive capital of the construction base in the Far East must be increased by almost twofold. But even during the five-year plan that has just commenced, the plans call for the region's requirements for metal structures to be satisfied by means of local resources. And this means that the production of an effective heater -- a special panel -- must be increased by a factor of six. The production of new materials and structures for the region will be organized: wall panels of the Kvadro type at Khabarovsk, fibreboard panels at Dalnerechensk, super-softeners at Komsomolsk-Na-Amure and formed insertion parts and rigging at Amursk.

Thus 2.7 billion rubles worth of capital investments will be used for development of the construction complex in the eastern part of the country, of which amount more than one half will be employed for improving an element that has fallen behind -- the construction materials industry. But we wish to emphasize once again that a proper return can hardly be expected if these resources are dispersed among numerous departments.

The decree of the CPSU Central Committee and USSR Council of Ministers entitled "Improvements in the Planning, Organization and Administration of Capital Construction" called for the main territorial construction administrations to be assigned the function of leading organs for the administration of construction in their regions. In particular, they must coordinate the use and development of the capabilities of the construction organizations and their production bases on the same territories. Unfortunately, the plans are being carried out very slowly: the departments are unwilling to part with their "diminutive" farms.

And what reserves are still available for concentrating production, improving intra-branch relationships or eliminating inefficient transport operations, particularly counter shipments? Such reserves have been pointed out by calculations carried out by our institute jointly with Khabarovskpromproyekt. For the enterprises of Minvostokstroy alone, an annual savings on the order of 25-30 million rubles is possible.

This is certainly a goal that we should strive for.

CONSTRUCTION PLANNING AND ECONOMICS

SINGLE INVESTMENT POLICY LINKED TO FINAL PRODUCT URGED

Moscow IZVESTIYA in Russian 23 Jan 86 p 2

[Article by L. Braginskiy, doctor of economic sciences: "A Common Investment System is Needed"]

[Text] Much is often said about the undesirable tendencies in capital construction and quite a few materials are published on this theme in newspapers including IZVESTIYA.

It seems that one of the most important reasons for the situation that has come about is that we have still not found such approaches to managing investment activity that would make it possible to fundamentally improve affairs in capital construction. Today the construction sector still remains economically isolated from the remaining links in public production.

The development of enterprises and their production activities is separated in the plan from capital construction. In the former case the goals for producing this or that product are established; in the second only the structures and not the amounts of production for which these structures are being built. At the same time society does not need structures and capacities but a finished final product. And construction, in our view, must be oriented toward precisely these common national economic results along with existing production. In other words, the very approach to managing investment activity and the economic mechanism must be fundamentally changed.

What is required is that first, all participants in producing fixed assets must be linked together and the lack of unity in their activities overcome. For example, the amount of work for design organizations is presently planned as a certain percent of the cost of the expected construction. The higher the cost the more documentation that is required and the better the financial results for the activity of designers. And we become witnesses of the fact that the volume of design and estimate work exceeds the real requirements for them by a great deal. Thus, designers make their "contribution" to the dispersion of capital investments. In the planning system they are oriented toward their own interests.

Construction and installation organizations have their own highly unique situation. On the one hand they seem to be interested in turning the projects over on time since the profits that are derived are associated with the

schedules; on the other hand the total volume of work that is completed has no less and, at times, greater importance for them. The amounts of material and technical resources with which they are provided, funds for wages, financing and credit directly depend on the volumes of construction. The more expensive the work and projects the more advantageous it is for builders and, certainly, the weight of these considerations exceeds the concern for completing the work that has been begun.

When speaking about plants that supply equipment for construction projects-- they also have their own interests. The cost of a large portion of new equipment is determined on the basis of an individual calculation of expenses and, therefore, they increase which ensures suppliers of obtaining a high level of profit. It is no accident that one fifth of the total increase in the cost of construction is caused by an increase in the price of equipment in comparison with the prices that are established in the designs.

Perhaps it is even more significant that existing production has generally proven to be on the opposite side from the investment process. The production of fixed assets is now isolated in the management system from their use, from the formation of resources for production and from the making of decisions about new capital investments.

In order to determine priorities when allocating capital investments for the national economy with its massive scales and a structure that becomes increasingly more complicated it is necessary to have a common inter-sector balance of them in the body of the national economic plan. But this has not yet happened today. When allocating means, let's say, to power engineering the planning agencies must know how much capital investment is required for the sectors that are organically linked with power production. For, on the one hand, the production of electrical and heat energy depends on the development of the extraction sectors (coal, petroleum and gas) while on the other hand the demand for energy is associated with the specific and overall consumption of energy for production in all sectors of the economy.

Thus, based on our calculations, the greatest return is achieved when more than 3 rubles of capital investments are allocated for associated sectors for each ruble that is allocated for power. And it may prove that it is more expedient to allocate means to consumers of electricity than to increase the output of electrical energy without end.

The monetary demands of sectors and enterprises has a highly significant effect on the formation of the capital investment plan. It should be noted that at the present time the distribution of financial resources among the sectors does not always coincide with the structure of the plan for capital investments and its priorities by far. Certain sectors dispose of a substantial portion of their own funds for expansion of production and end up in an advantageous situation when the plan is drawn up and material resources are distributed. At the same time certain "poor" sectors (for example, coal) expect subsidies from the budget and do not receive their required allotment by far.

The majority of construction and installation organizations, and I wish to emphasize this circumstance, belong to the number of those that have low levels of profits. As a result, the proportion of capital investments for developing the construction industry did not exceed four percent of the total investments allocated for the national economy for many years. And the result of such a situation is evident. Based on the level of the fleet of equipment and the mechanization of labor-consuming work construction production lags behind industry by almost 40 percent and is experiencing a "majority" of expenses for living labor (its proportion exceeds half of the total expenses). It is precisely because of this that labor productivity in construction organizations is 51 percent lower than for industrial enterprises.

As a rule the presence of incomplete construction for a long period of time blamed only on construction organizations and worsens their weak financial situation. Clients, before accepting a project for use bear practically no economic responsibility for it. Both the schedule and the cost of construction have almost no effect on their economic situation. Replacing the system of making advance payments to builders (by clients) with a bank credit system, along with certain pluses, led to a reduction in direct economic relations and a reduction in the direct influence of the client on the contractor.

And so, the conclusion can be drawn that presently construction production is poorly linked to the consumers of its products and labor. This is also highly noticeable when studying the management system. Individual planning by all participants in the production and use of fixed assets, insufficient incentive and responsibility toward the final results--all of this is undoubtedly the "Achille's heel" of the economic mechanism for managing the investment process.

In becoming oriented toward achieving the final national economic results from capital investments--obtaining products and income--it is expedient, in our view, to shift to the formation of a common planning goal for all participants in the investment process based on a basic indicator--the amount of pure income per ruble of total investments. When this is done the specific goals of the individual participants are equal as is an evaluation of the contribution of each toward the final result which will be determined by their share in the agreement. This principle should be laid as the basis for providing an incentive for each to achieve the final result.

To do this it is expedient to consider and plan for the overall need in working capital (and not just in the growth of the standard) along with capital investments in the traditional sense, to link financing with short-term credit investments, i.e., shift from financing by individual items to drawing up a common financing and credit plan and investment program.

And there is one more thing. Under conditions where all participants in the investment complex turn out to be isolated it is possible (and even natural) to have varying levels of profit. If investment is viewed as a single whole that is economically oriented toward achieving an overall result then such a situation becomes an anachronism.

For variations in profitability are due to different levels of being supplied with funds and labor productivity that varies. It is as if the existing "tight spot" in the complex is deliberate. Therefore, it is completely valid to ask the question about forming a system for redistributing financial resources among the participants in the process. Such a redistribution could take the form of flexible pricing. For example, the client will have the right to pay the contracting organization a higher price for work that is completed in a shorter period of time. In this case the construction organization would obtain additional resources for equipment and incentives while the client would pay for a consumer quality such as a reduction in the schedule for completing a project or for obtaining a product. Other methods could be suggested; for example, the direct redistribution of resources by means of forming a common financial fund for the investment system.

In regard to the considerations set forth it would be expedient, in our view, to include the following addition in the draft of the new wording of the CPSU Program: "Implement, in stages, the formation of a common investment complex for the country after having economically linked capital construction with existing production. Transfer to planning and giving incentives to the activities of all participants in the investment complex based on the final national economic results depending on the number and quality of the products that are obtained and the income per ruble of total investments."

It seems that such a proposal is being written into the long-range economic concept of the transition to rails of intensive development for the national economy.

9495

CSO: 1821/117

BRIEFS

HELICOPTERS FOR CONSTRUCTION--A letter received from A. Chernitskiy, published on 2 November of last year, was given the title "The Construction Project Needs a Helicopter." The Editorial Board has received replies from the 1st deputy chairman of USSR Gosstroy A. Deminov and the Minister of Civil Aviation B. Bugayev, both of whom noted that the newspaper had raised and evaluated the problem correctly. In the interest of accelerating the extensive introduction of helicopters into construction, USSR Gosstroy considers it necessary to create helicopter-cranes with a lifting capability of up to 20 tons and dirigibles with a cargo carrying capacity of up to 600 tons for the transporting and installation of large-scale construction cargo, as called for in the all-round program for scientific-technical progress in the USSR during the period 1986-2005; an expansion in the network of regional detachments for helicopter installation; improvements in the structural elements for high-level installations and in the methods and means for installing them; a solution for the problems concerned with paying for the services of Aeroflot for the carrying out of construction-installation work. For its part, the Ministry of Civil Aviation, noting that during the 11th Five-Year Plan helicopters efficiently serviced many large construction projects and performed a great amount of work in agriculture and forestry, found itself in agreement with the opinion expressed by the author of the letter concerning the need for improving the wages and rates for the use of "flying cranes." Recommendations are being prepared for improving the planning, wages and incentives for construction-installation work involving the use of helicopters. Moreover, indicators for the efficiency of their operations are being introduced in the interest of improving their utilization. Following a check, all of the branch's enterprises will be converted over to the new managerial conditions. /Text/ /Moscow

SOTSIALISTICHESKAYA INDUSTRIYA in Russian 19 Feb 86 p 2/ 7026

COLLECTIVE CONTRACT IN CONSTRUCTION--The USSR Goskomtrud /State Labor Committee/, by agreement with the AUCCTU, USSR Minfin /Ministry of Finance/ and USSR Stroybank /All-Union Bank for the Financing of Capital Investments/, has adopted a decree on the further development of contractual forms for labor organization and wages in construction. The principal conditions for converting production sectors and larger structural subunits over to a collective contract are set forth in this decree. The ministries and departments, while observing these principal conditions, must develop and by agreement with the appropriate trade union committees approve the branch statutes concerning the conversion of large structural subunits over to the collective contract. The dissemination of

contractual forms for labor organization and wages to larger structural subunits in construction is aimed at further strengthening the economic interest of labor collectives in the timely placing in operation of production capabilities and installations, accelerating the rates of growth for labor productivity, achieving a high level of quality in the carrying out of construction-installation work and realizing maximum economies in material and financial expenditures. A list of basic construction-installation organizations has been approved for working out the use of contractual forms for labor organization and wages in large structural subunits. These organizations have been authorized to develop and change independently the structure and staffs of organizations, in keeping with the wage fund, computed in accordance with the norms for personnel strength and the wage fund for leading, engineering-technical workers (including line personnel) and office workers, in the absence of observance of the ratios for individual categories of workers. A decision was also handed down calling for the creation, by agreement with the ministries and departments, of an interdepartmental committee attached to USSR Goskomtrud for the development of and improvements in the contractual forms for labor organization and wages in construction. [Text] /Moscow EKONOMICHESKAYA GAZETA in Russian No 9, Feb 86 p 2/ 7026

KIEV GENERAL PLAN--The work of creating a new general plan for the development of the hero-city of Kiev, for the period up to the year 2005, has been completed. According to IZVESTIYE correspondent A. Dolenko, organizations of the Ukrainian SSR, more than 40 scientific-research and planning institutes and scientists from Moscow and Leningrad participated in the development of this plan. The chief goal of the new general plan is to achieve harmonious development of this large city, together with its national economic profile and administrative-political and cultural importance. The disposition of the civil housing construction projects of Kiev, which will stretch out along its Dnepr axis, will be based upon the principle of completing the mass housing projects under construction and increasing the volumes of modernization for the central portion of the city and the all-round development of new micro-regions. In Kiev, the plans call for the formation of six planned zones. Four such zones are being formed on the right bank -- central, northern, western and southern. On the left bank -- northern and southern. The peripheral zones unite around the central one, forming a complete municipal organism for Kiev, with maximum use being made of the territory's internal resources. The level for the mass housing construction consists of 9-16 stories. Homes consisting of 2-4 and 6-7 stories will also be erected. These will organically become a part of the building to take place in historically established municipal regions. With regard to the development of municipal passenger transport in the city, a preference is shown in the general plan for a subway and for high speed street cars. The development of a construction plan on the banks of the Dnepr must include the construction of new bridges -- in the southern zone, in combination with a subway, and also in the region of Vishenki Village and the new subway bridge in the Podol region. [Text] /Moscow IZVESTIYA in Russian 10 Feb 86 p1/ 7026

OCCUPATIONAL SAFETY IMPROVES -- During the period 1981-1984 there was a marked decrease in the level of occupational injuries in rural construction and in associated work losses (by 5 and 11 percent respectively compared to 1980). Each year approximately 80 percent of the organizations and enterprises (approximately one-third of these are mechanization administrations) worked without accidents; more than 40 percent (approximately one-fourth were mechanization administrations) had no occupational injuries for two years and approximately 20 percent (one-quarter were mechanization administrations) had no such injuries for five years. [Excerpt] [By A. A. Belskiy, engineer] [Moscow MEKHAIZATSIYA STROITELSTVA in Russian No 3, Mar 86 p 20] [COPYRIGHT: Stroyizdat, 1986] 9069

PROTECTING CONSTRUCTION WORKERS IN THE NORTH--The book gives an account of the features of protecting workers in various construction trades under conditions in the Far North. An analysis is given of the reasons for traumatism and occupational diseases and recommendations have been worked out by taking into consideration preventive treatment and the influence of natural climatic factors on the human organism. Engineering solutions are given for safety techniques when doing general construction work under northern conditions. The book is intended for engineering and technical workers in construction organizations [Excerpt of Review of Book by M. N. Karasev, "Okhrana truda v stroitelstve na Severe, "Leningrad, Stroyizdat, 1985, 208 pp., 14,800 copies] [Moscow EKONOMIKA STROITELSTVO in Russian No 1, Jan 86 p 44] [COPYRIGHT: Stroyizdat, 1986] 9495

LENINGRAD FLOOD PROTECTION WORK--The most difficult work of installing a floating unit on an underwater foundation--a portion of the complex of structures to protect Leningrad from floods--fell on New Year's Eve and the first days of the new year. [Text] [Moscow IZVESTIYA in Russian 6 Jan 86 p 1] 9495

CS0: 1821/117

HOUSING CONSTRUCTION

DEBATE ON MEASURES TO AID PRIVATE HOUSING CONSTRUCTION

Barriers to Private Builders

Moscow STROITELNAYA GAZETA in Russian 4 Dec 85 p 3

[Article by V. Platonov, economist of Tokarevka settlement, Tambovskaya Oblast: "The Heavy Burden of a Builder"]

[Text] In the Tokarev regional inspectorate of the RSFSR Central Statistical Administration I was given some figures: 7351 and 1348 square meters. The first is the amount of housing built last year by kolkhozes, sovkhoses, plants and organizations. The second is that built by rural and municipal residents on their own savings. In 1983, the relationship between the two was not at all in favor of the individual builders. At that time they had built a total of only two homes. One was in the countryside, the other in a rayon center. On the government's budget, 9147 square meters of individual housing was built.

Recall the 60's and 70's. We were poorer then, but the homes built with our own hands and on our own savings were multiplying in the villages. Why has people's passion for building cooled down today?

Today the kolkhozes and sovkhoses rent out quite a lot of housing, and rural residents who traditionally have a longing for their own home know that they will get one without bothering with an application. Those who try to do everything independently fall into a difficult situation. The fact is that few prefabricated two- and three-room home parts are now coming onto the market, and there is also a lack of timber, roofing and bricks. And plumbing equipment and parts can be obtained in the region only in a very dubious manner.

To find brick is a big problem. The funds for trade are miserly. To an individual they'll give enough for a foundation and a stove.

The reduction in individual housing construction is also caused by other factors. Kolkhozes and sovkhoses must account for the housing they build. Therefore, planning organs try to use construction materials for current sites first. Demand for individual housing upon the ispolkoms (and workers and employees build homes under their aegis) does not exist in practice.

I remember times when 50-60 homes would spring up in villages of our rayon. A home was built in a year, even in a summer. Now, with a more mature construction industry, homes are built much more slowly and have become much more expensive.

A worker of the rayon military commissariat, N. Samylin, built a home with brick exterior, three rooms with steam heating, kitchen with gas tank and auxiliary premises in 1971 for R5600. He completed it over the summer and fall.

A colleague of the rayon newspaper *IZYAK*, M. Kostyayev, has a similar home. Construction took 2 years, from 1980-1982, even though relatives and the head of the household helped the workers. It cost R8000. The builder took out credit.

A *PIK-3* Vodstroy trust foreman in Tokarev, K. Nenashev, hoped to build his home in a year. But in vain. His application for a home was approved after one year. For a long time he could not find plumbing equipment and other materials. So the process went on and on, and the new home cost him about R9000.

In relating the reasons in such detail for the decreased interest of rayon residents in "private" ownership, I can also see ways in which the rate of individual housing construction can be increased. First of all, we must interest the ispolkoms and planning organizations in this important matter and orient them towards increasing the housing fund from the population's own means.

Local Authorities Reply

Moscow STROITELNAYA GAZETA in Russian 4 Dec 85 p 3

[Article by I. Karasev, deputy chairman of the Tambov Oblispolkom: "The Position of the Tambov Oblispolkom"]

[Text] During the first 4 years of the current [1981-1985] plan 148,000 square meters of homes were built by individual builders. Every year over 40,000 cubic meters of timber and lumber, 10,000 tup [technical design specification] units (in thousands of standard blocks) of slate, 3 million square meters of soft roofing, 600,000 tons of iron roofing, and about 20,000 tons of cement are sold to the population through the consumer cooperative system. More funds have become available for radiators, plumbing and other fixtures.

But all of this is insufficient to meet builders' demand. Their orders for industrial products, brick and prefabricated homes are not being met.

During 1986-1990, the everyday service and communal-housing plants of the oblast have been assigned the task of building and repairing individual homes for a total volume of R13 million. This is double the level attained during the current five-year plan.

Production and construction organizations of the oblast are to significantly increase output of prefabricated reinforced-concrete and concrete products and slurry, asphalt concrete, window and door units and other parts for sale to the population. A means for delivery of materials has also been obtained.

These measures should raise housing construction by the population's own means to a higher level and will assure a significant strengthening of workers' cadres in the countryside.

Correspondent's Observations

Moscow STROITELNAYA GAZETA in Russian 4 Dec 85 p 3

[Article by L. Kiryushina: "The Opinion of a STROITELNAYA GAZETA Observer"]

[Text] We are told about construction materials which arrive in consumer cooperative stores and which, as a rule, rural builders are buying. And there is silence on the goods for state trade stores and timber outlets which serve municipal residents and workers' settlements. It is as if construction activity by these residents had halted forever.

Let's look at the figures in this connection. Of the 148,000 square meters of housing space built by individual builders during the 4 years of the current five-year plan, 78,000 were built by city residents and 70,000 by rural residents. As we can see, people living in the city have not lost their taste for their own homes. It's just not easy to build one, as V. Platonov writes. Undertake it yourself, and you can't buy the materials. If you turn to the service plants, they propose that you wait 2-3 years.

The deputy chairman of the oblispolkom optimistically tells the editors that all construction and repair orders for individual homes will be handled by local everyday service and communal housing personnel. But there are many orders -- twice as many as during the 11th 5-year plan. So, one might ask, what miracle must occur? As we know, all attempts for now to force these personnel to "work faster" have been fruitless. The service sphere, unfortunately, has small, poorly supplied construction sub-units.

So that's why all the contractors, ministries and government agencies with construction and repair organizations are attracted to the service sector.

The Tambov Oblispolkom, like all the others, has received a limit from RSFSR Gosplan in use of contract work in the service sector. The limit, speaking figuratively, is a strong reinforcement to everyday and communal housing personnel. How the ispolkom will use this help is a different matter. More precisely put: does it want to use this help?

This may seem strange, but the editors know that many ispolkoms, referring to the absence of orders by the population, design documentation and for various other reasons, are trying to "create" limits on contract work which has been especially designated for the service sector, with other purposes in mind. The limit, as is known, is hard to come by, and a use for it can always be found. We have another question: why is Comrade Karasev silent about these limits, why did he mention only the everyday service and communal housing personnel? Does he have some kind of calculations which show that help to them will be superfluous?

RSFSR Gosplan Replies

Moscow STROITELNAYA GAZETA in Russian 5 Mar 86 p 3

[Unsigned article under the "Readers' Correspondence" rubric : "A Home on Your Own Money"]

[Text] The editors published the letter of reader V. Platonov from the settlement Tokarevka in Tambovskaya Oblast (STROITELNAYA GAZETA 4 December 1985). In it he speaks of people's loss of interest in owning homes and gives some reasons for this: it is difficult to buy materials, the cost of housing is growing, and help for builders from local ispolkoms is clearly insufficient.

The editors considered as incomplete the answer to this letter by Deputy Chairman I. Karasev of Tambov Oblispolkom since he did not reveal the true condition of individual housing construction in Tambov.

When asked again, Comrade Karasev gave the following answer:

"This year the oblast was given the task of starting 15,000 square meters of individual homes in towns and workers' settlements costing approximately R6 million. Of this total, R330,000 will be contracted out by organizations of the RSFSR Ministry of Civil Housing Construction. The remainder will be privately financed by individuals, for which the technical-material resources will be fully guaranteed through the trade network, consumer cooperatives and lumber bases.

"Builders' demand for housing construction by contractors will be fully satisfied in 1986. In the future the volume of contractor works will grow, thanks to the creation of special services under the rayispolkoms and gorispolkoms.

"Construction materials worth approximately R3 million will be sold to the population in 1986, including: R1 million from lumber trade bases, R1.4 million from the Oblpotrebsoyuz [Oblast Consumer's Union], and R600,000 from trade administrations."

The letter of reader V. Platonov was reviewed by RSFSR Gosplan. The editors received the following reply:

The author of the letter touches upon the important problem of housing construction using workers' private funds. Large-scale organizational measures have been designed to increase the volume of such housing during the last few years and privileges for builders have been established.

The construction of individual homes has been included in kolkhoz and sovkhos plans for economic and social development since 1984. Resources have been allocated for contractor and private construction. Beginning this year, this construction has been included in the plan for cities and workers' settlements.

In the Chuvash ASSR, housing has been built at the expense of the population at twice the volume provided for in the state capital investment budget during 4 years of the 11th Five-Year Plan, and at 1.8 times greater in the Bashkir ASSR.

In view of the importance of individual rural construction, RSFSR Gosplan is assigning funds on a priority basis for lumber and construction materials to Rospotrebsoyuz [RSFSR Union of Consumers' Societies].

As of 1986, it has been proposed to the Union of Ministries of autonomous republics and to kray, oblast, and the Moscow and Leningrad ispolkoms to sell local materials (brick, lime, crushed stone, gravel) to the population at a level of 10-15 percent of production, instead of the 6 percent level proposed earlier.

The local sale of lumber and construction materials to builders is under the control of local ispolkoms.

At present RSFSR Gosstroy is selecting standardized economical designs (especially zero-based) to lower the cost of individual housing.

The measures undertaken have put a stop to the annual decline in individual housing construction during the 11th Five Year Plan. However, this process is still continuing in Vologodskaya, Kaluzhskaya, Ivanovskaya, Kostromskaya, Yaroslavl'skaya and Saratov'skaya oblasts.

[Signed] Ye. Sidorov, RSFSR Gosplan deputy chairman

CSO:1821/146

HOUSING CONSTRUCTION

HOUSING DESIGN MONOTONY LINKED TO LACK OF ECONOMIC MOTIVE

Moscow IZVESTIYA in Russian 17 Dec 85 p 2

[Article by Yu. Dykhovichnyy, Secretary of the board, USSR Union of Architects: "What Our Houses Will Be Like"]

[Text] What generates monotony and drabness in modern architecture and urban construction? Why is it that the industrialization of construction which benefits the people by enabling us to erect dwellings, schools, clubs, shops, hospitals, sports facilities on an unprecedented scale goes hand in hand with the fading away of architecture's esthetic and educational powers?

"Why is one depressed at the monotony of the new municipal rayons? How can the scale and tempo of large panel construction be reconciled with architecture's need for aesthetic values?" wonders Yu. Dykhovichnyy, secretary of the USSR Union of Architects.

The results achieved by the architects and builders of Moscow, Leningrad, Vilnius, Minsk and a number of other cities allow us to state that this is not so, that even with mass large-panel construction it is possible to create a truly beautiful human habitat encompassing entire city blocks. Nevertheless, we continue to speak of these projects as individual achievements, not as a massive onslaught against the cheerlessness of standardization.

What stands in the way of making this crucial transition? It is extremely important that this question be answered now (and answered by deed!) when the new draft Program of the CPSU sets this objective: "To intensify the economy and accelerate scientific and technological progress we must achieve a substantial rise in the technical and economic level of construction, transform the construction industry into a unified industrial process, improve the quality and lower the costs of design and construction work, reduce construction time and the time needed to assimilate new production facilities."

One of the main causes of the monotony of mass construction is the anonymity and the endless repetitiveness of panel houses. In practical terms it is as though a permanent architectural product was coming off the conveyor much like cars in an automobile plant. Cars, however, move around and are quickly replaced, but houses sit in their "parking lots" for many years.

The primary precondition for distinctiveness is a compositionally unified ensemble in each residential complex or region. The character of the ensemble is dictated by the specific conditions of

construction and reflects the author's creative individuality. But can these conditions be met if at the present time there are 516 active housebuilding enterprises in the country whose output comprises about 60, in some cities up to 90 percent of all residential construction, and these enterprises use a closed-circuit type of technology mainly with the aid of forms intended for one end product only and with no possibilities for retooling?

And it is not just the forms. Unfortunately, from the very beginning large-panel housing construction enterprises were so designed as to leave no room for continuous modification of output so that today any such change reflects painfully on every link of the technological chain - from storage of raw materials to storage of finished goods.

The contradiction between the needs of production and the aspiration to architectural diversity can be overcome by adopting a fundamentally new method of industrialized housing construction. It is called the Master Catalogue of Standardized Details. This involves the creation of a scientifically selected set of standardized construction details which are used to assemble buildings and structures varying greatly in layout, architecture and function.

To be sure, this method calls for a complete change in the organization of industrial production, for a transition to a new, flexible technology. What do we mean by the terms "flexible technology", "flexible production" as applied to housing construction? Above all, the subdivision of all details listed in the master catalogue into frequently changeable items (details of the facade) and relatively permanent ones (interior walls, floors, ceilings, stair flights, landings, ventilation blocks). The changeable parts can be fabricated by the stand method in universal refittable forms rather than on conveyor lines, which would allow the architecture of the facades, the sculpture and texture of the panels to be changed at will.

Architectural detail shops and the concomitant workshops to make matrices and plastic forms must be organized in all housing construction combines (DSK). The DSK's must also create various sectors to plan computerized production and grouping of details for consignment to different construction zones. The reason it has to be computerized is that the concept "flexible construction process" encompasses the principles on which that same production is organized, its control and regulation, the creation of specific sets of fittings, an armature section, enlarged storage facilities for finished products, a greatly improved planning and grouping process. All this is possible only with the aid of computer technology.

However, none of these measures will yield results unless the transition is made to a completely new system of prices, incentives, bonuses for mastering new products, higher pay for non-standard

items. But above all - unless we abolish the gross output indicator to measure the DSKs' performance.

Today the only goals the DSK's are interested in meeting are overall construction volume in square meters and productivity of labor. Naturally, this is easier to achieve with production of like-type items mastered long ago (though now obsolete). The assimilation of new types of houses or block sections as well as variations of facades or other building elements will, of course, entail greater effort and expenses on the part of the DSK's, but it is neither planned nor encouraged. If we are to improve the quality and artistic expressiveness of our housing in deed, not word, it is imperative that we create such conditions, likewise in deed, not word, as would stimulate the adoption of the more up-to-date methods by the DSK's.

The greater part of housing construction must be measured and planned in finished urban complexes which in addition to the residential buildings themselves include social, cultural and consumer services structures and the betterment of adjacent territories. Such construction has been carried out in the Krylatskoye and Brateyevo districts of Moscow, and its advantages are obvious. What the new resident gets when he moves in is not only a new apartment, but all the necessary services as well, because the residential buildings are ready for use simultaneously with schools, nurseries, trade enterprises, polyclinics and telephone exchanges.

The basic precondition for making the transition to this progressive method is the successful development and industrial assimilation of the project design of all the structures earmarked for "package deal" construction. It is inadmissible for the residential buildings to be erected by industrial methods and the trade and services enterprises, the schools and nurseries in a primitive fashion. To solve this problem it is imperative that we switch to the new, progressive panel elements for the entire range of public buildings. To whom should the solution of these problems be entrusted? First and foremost, in my opinion, to the State Committees for Construction Affairs and for Civil Construction and Architecture.

Industrialized construction today finds itself in a very responsible, watershed position no less important than 30 years ago when it first came into being.

The task now, as we have already noted, is to retool the construction industry, replace the obsolescent technology, modernize the organization of production on the basis of the most up-to-date achievements of science and technology. We have to admit, however, that the science of architecture and construction has proved itself ill-prepared to produce clear-cut, specific proposals to solve

these problems. To this day there are no scientifically developed, tried and tested methodological guidelines on project-designing and organizing highly-effective panel housing construction that would ensure the uniqueness and the diversity of architectural compositions, sculptural and layout variety, horizontal diversity, and would allow the industry to preserve a minimal number of product types and sizes and the DSK's and construction projects to raise labor productivity.

This modern technology must have a feedback relationship with project designing, must exert an active influence on the creative methods used by the architect at this time of industrialized construction. What this means is that the architect working in mass housing construction cannot function without knowing the technology of modern production and the layout of large-panel housing, without the ability to reasonably resolve problems relating to unification.

Scientific and technological progress truly opens broad horizons before the architect. But first we must open the door to scientific and technological progress per se.

12258

CSG: 1821/87

HOUSING CONSTRUCTION

MASS PRODUCTION OF PRE-FAB HOUSING PARTS IN TASHKENT

Tashkent PRAVDA VOSTOKA in Russian 2 Nov 85 p 3

[Article by UzTAG corres. V.Demin: "The First Room Off the Conveyer"]

[Text] The first habitable room, completely equipped and finished, has come off the conveyer at the Tashkent experimental block housing-construction plant. This enterprise, a unique phenomenon for a seismic area of the country, is currently in the process of being put into operation.

At the present time the entire complex of technological processes is being assimilated literally in stride. All the equipment is undergoing final adjustment, above all the essential units - the room, roofing and elevator-shaft forming machines. This hardware was manufactured on order from Glavtashkentstroy by enterprises of the USSR Ministry of Construction Machinery and designed by engineers from the Giprostrommash (Moscow) and NIISTromproekt (Tashkent) institutes.

When it reaches full capacity the plant will be producing 120 thousand square meters of housing annually. Construction sites will be supplied directly from the plant's storage zones with rooms ready for habitation - with all the electrical wiring and plumbing fixtures in place, with doors and glazed windows, painted, whitewashed and wall-papered. The builders will only have to put the rooms together into apartments and hook up the utilities. That is why the erection of, for example, a 72-apartment residential house will take no more than 2 months - 3-4 times quicker than would be needed if ordinary panels were used

The specialists from the Tashkent zonal scientific research design institute for standardized and experimental project design who developed the first six block sections for the enterprise took great pains to enliven the look of standardized construction. The blocks are designed in such a way that they can be put together like toy cubes in scores of different combinations.

The foundation has already been laid in the Sergheli massif for the first nine-story house to be built of blocks.

HOUSING CONSTRUCTION

BRIEFS

NORILSK HOUSING CONSTRUCTION--The arctic night has arrived. Before vanishing over the horizon for a month and a half the Norilsk sun sent its last weak beam of a smile to those who mine the local ore-rich mountain - the hewers of the "Medvezhyy Ruchey" mine. The city of metallurgists, miners and architects lives in a buoyant rhythm of its own and continues to build. Never before has it put so many well-designed apartments into service, never before has the city seen so many housewarmings. A million square meters of housing in five years - such is the figure achieved by the builders of Norilsk. The arctic night notwithstanding, they are continuing their efforts to bring closer the day when every family in the city will get a separate apartment. Happy housewarmings are in store for those residents who will be given the keys to their new apartments on New Year's eve. [By A.Dzyura] [Excerpts] Moscow PRAVDA in Russian 6 Dec 85 p 3/ 12258

NEW APARTMENTS AT KATEK- Chernenko - 350 builders' families of Bere-zobskiy GRES and the Berezovskiy coal mine recently moved into new apartments. Considering that the housing problem at KATEK has over the past few years grown quite acute, the commissioning of 27 thousand square meters of housing before the end of the year turned into a truly joyful occasion for the young residents of the town of Chernenko. In addition to the well-equipped apartments the builders commissioned five youth hostels. Also erected were a consumer services center, a vegetable shop, and a trade center is nearing completion. In the next five-year period the volume of construction in the city will increase substantially. [By V.Sbitnev] [Text] Moscow SOTSIALISTICHESKAYA GAZETA in Russian 18 Oct 85 p 2/ 12258

CSO; 1821/27

CONSTRUCTION METHODS AND MATERIALS

INSTALLATION, SPECIAL CONSTRUCTION WORK MINISTER ON NEW PLAN

Moscow MONTAZHNIYE I SPETSIALNIYE RABOTY V STROITELSTVE in Russian No 1, Jan 86
pp 2-5

[Article by B.V. Bakin, USSR Minister of Installation and Special Construction Work: "New Five-Year Plan -- New Tasks"]

[Text] Our country, in carrying out the decisions handed down during the 26th CPSU Congress, took a large new step towards improving the well-being of our Soviet people and developing all branches of the economy. During the 11th Five-Year Plan, more than 840 billion rubles worth of capital investments were employed for strengthening the logistical base of the national economy and the construction of housing, socio-cultural and other installations. More than 1,000 modern large-scale industrial enterprises were placed in operation.

More than 550,000,000 square meters of housing space were placed in operation and this made it possible to improve housing conditions for more than 50 million persons. An improvement took place in the level of civic improvements in housing. More work was carried out aimed at accelerating scientific-technical progress and the technical re-equipping and modernization of existing enterprises.

Together with all Soviet people, selfless work is being performed by the collectives of organizations and enterprises of USSR Minmontazhspetsstroy [Ministry of Installation and Special Construction] and by workers, scientists, engineers, technicians and office workers. The tasks for 1985, the final year of the five-year plan, and also for the five year plan as a whole were completed successfully.

During the 1981-1985 period, the ministry's installation organizations increased their volume of contractual work by 9.8 percent compared to the 10th Five-Year Plan, raising it to 10.7 billion rubles worth in 1985. Labor productivity increased by 14.5 percent during this period and this ensured an increase in the volume of work. The ministry's industrial enterprises increased their volume of goods sold by 6.2 percent during the five-year plan and in 1985 it amounted to 2,013,000,000 rubles worth. Labor productivity in industry increased by 15.5 percent and this produced an increase in the volume of goods produced.

Jointly with the builders and clients, the installers ensured the placing in operation of a considerable number of important national economic projects, as

called for in the "Basic Directions for the Economic and Social Development of the USSR During the 1981-1985 Period and the Period Up To 1990," approved during the 26th CPSU Congress. During the 11th Five-Year Plan, the ministry's organizations, jointly with the construction organizations and clients, placed in operation approximately 3,000 installations and capabilities in accordance with the plan for economic and social development throughout the country. Having launched an extensive socialist competition for placing installations in operation ahead of schedule, the collectives of installation organizations carried out their tasks in a tense and efficient manner.

During the years of the 11th Five-Year Plan, considerable capabilities were introduced into operations for the production of steel, rolled metal and coke, for the extraction of ores and coal, for the refining of oil and for the production of mineral fertilizers and ammonia. Large capabilities were also introduced for the production of piping, sulphuric acid, cement, ethylene, plastics, footwear, for the production of machines for agriculture and livestock husbandry and other capabilities for the production of important industrial products and consumer goods. Other facilities placed in operation included the Kostomuksha GOK (Mining and Concentration Combining), the Altay Coke-Chemical Plant consisting of four coke batteries, a Moldavian metallurgical plant, Rossosh Chemical Plant and 54 gas compressor stations on gas mains. Large complexes were placed in operation at the Oskolskiy Electro-Metallurgical Combine imeni L.I. Brezhnev, the Sayansk Aluminum Plant, the Yuzhno-Yakutsk Coal Complex and at the Elektrostal and Serp and Molot metallurgical plants.

The ministry's installation organizations successfully coped with the tasks for placing capabilities in operation at facilities of the country's Food Program. Large plants were placed in operation for the processing of meat, milk and sugar beets in such cities as Gorkiy, Penza, Gomel, Perm, Brest and Khmel'nitskiy, in Kursk and Kirovograd oblasts and in other cities and regions throughout the country.

In 1985, the ministry's organizations successfully coped with additional socialist obligations undertaken in honor of the 27th CPSU Congress, in commemoration of the 50th anniversary of the Stakhanov movement and in celebration of the 68th anniversary of the Great October and they ensured the placing in operation of four coke batteries at the Kommunar, Dnepropetrovsk and Krivoy Rog coke-chemical plants and the Chelyabinsk Metallurgical Combine and capabilities for the production of cement at the Nikolayevsk Mining-Cement Combine and a creamery at Penza. Capabilities for the production of gas turbines were placed in operation at the Nevskiy Machine Building Plant, for agricultural machines at the Dnepropetrovsk Combine Plant, for sulphuric acid at the Belorechensk Chemical Plant imeni 60th Anniversary of the USSR, for sewing goods at Sewing Factory No. 3 in Saratov, for knitted goods in the city of Komsomolsk in Poltava Oblast and a number of other installations.

It bears mentioning that the socialist obligations were not carried out completely. The timely completion of installation and special construction work and the placing in operation of a number of important projects was not ensured. In 1985, the installers experienced difficulties at some installations in connection with the completeness of equipment and materials supplied by the client. In this regard, certain capabilities in the light industry, machine

building and installations associated with environmental protection were not placed in operation. For a period of a year, reductions were tolerated in the deliveries of metal structures by plants of all-union production associations of Soyuzstalkonstruksiya and Soyuzspetslegkonstruktsiya and this adversely affected the work of the installation organizations at some installations. In some regions, the trusts of Krasnoyarskstalkonstruksiya, Tsentroelektromontazh, Sibprodmontazh, Tsentrotekhnontazh, Uralteploizolyatsiya and Soyuzkislород-montazh performed at less than their potential in 1985.

Fine and well organized work was performed by the trusts in 1985: Order of Lenin Trust No. 7, Order of the October Revolution Vostokneftezavodmontazh, Order of the Red Banner of Labor Vostokmetallurgmontazh, Order of the Red Banner of Labor Koksokhimmontazh, Volgoneftekhhimmontazh, Order of the October Revolution and Red Banner of Labor Soyuzprommontazh, Order of the Red Banner of Labor Soyuzmontazhlegmash, Order of the Red Banner of Labor Prodmontazh and others.

The fulfillment of the planned tasks for placing new capabilities in operation was promoted by work performed by the ministry's organizations and enterprises in connection with accelerating technical progress. The achievement of these results promoted an expansion in the introduction into the practice of installation and special construction work of leading technologies and methods for organizing labor, progressive structures and materials, new and efficient installation equipment and mechanisms and instruments. One important trend with regard to raising the efficiency of installation work is that of converting over to the installation of complete technological lines of a raised plant readiness. During the past five-year plan, more than 700 were installed. However, their volume with regard to the overall volume of equipment installed remains low and does not exceed 15 percent. This represents one of the chief reserves for raising the labor productivity of installation personnel.

The large-unit installation of equipment, structures and installations underwent further development. Freight lifting means created within the ministry make it possible to install in the planned position and in completely assembled form hundreds of units of equipment weighing up to 1,000 tons and covering units for industrial buildings up to 7,000 square meters in area and 1,200 tons in weight. Improvements are being carried out in the technology for large-unit installation of structures for gallery spans, granulation towers, sectional piping and other installations. During the installation of enlarged sheet steel drums for the body of blast furnace No. 5 (the world's largest) at the Cherepovets Metallurgical Plant, use was made for the very first time of electro-slag welding using powder-additive material and this made it possible to increase its speed by twofold.

During the years of the 11th Five-Year Plan, the production of light metal structures in complete delivery sets was increased by a factor of 2.4. Work continued in the area of improving the supporting and protective structures used in industrial buildings and also in the expanded use of bolt and dowl fastenings and also plant painting. For example, the volume of use of bolted installation joints instead of welded ones increased by 30 percent, triple-layer protective structures by a factor of 1.9 and wide-shelf H-beams -- by a factor of 1.5.

Increases took place in the volumes of pipeline units and sections produced under plant conditions. For all practical purposes, solutions were found for the problem concerned with ensuring that the installation organizations are supplied with centrally produced steel pipeline parts ranging in diameter up to 500 millimeters. The nomenclature of the goods being produced is expanding, including for the construction of high pressure pipelines and also for the country's northern regions. A technology has been developed and experimental models produced for the production of steel elbows ranging in diameter up to 1,400 millimeters. A considerable economic effect was realized from replacing steel pipe with polymer units, the volume of use of which increased by almost 80 percent during the five-year plan.

At the present time, "damp" processes used in the installation of thermal insulation have been practically eliminated, all interior sanitary engineering and ventilation work is being carried out using plant produced units and parts, the use of multipurpose assembled electrical structures is expanding and the volumes for the production and installation of built-in facilities of complete plant readiness are being increased.

Erecting cranes with a lifting capability of 100 tons, motorized hydraulic lifts with a lifting height of up to 28 meters, self-propelled scaffolding, towing winches and more than 200 types of other new mechanisms and special instruments have been created and made available for production. Achievements in this area are the results of tasks carried out in connection with the "Basic Directions for Raising the Technical Level of the Ministry's Installation and Special Construction Work During the 11th Five-Year Plan" and also branch scientific-technical programs.

At the same time, it bears mentioning that substantial shortcomings still persist in the work concerned with the creation and introduction of new items of equipment. Here the chief reserves have to do with increasing the scales of use for progressive technologies, structures and materials that have already been mastered. The level of industrialization of heat-installation and heat-insulation work is still completely inadequate. The proportion for the installation of technological equipment in the form of ganged units does not exceed 10 percent. The level of industrialization for pipeline operations amounts to only 44 percent, compared to an optimum value of 75-80 percent.

The quality of some types of equipment remains low and serious shortcomings persist in the use of machines and mechanisms. Glavstroymekhanizatsiya /Main Administration for Mechanization of Construction Work/ and GlavUPP have not fully solved the problems associated with the series production of equipment for mechanized lines engaged in the production of pipelines, mechanisms and instruments for the installation of polymer and steel piping and the use of high-strength bolts and other types of installation work. As a result of these and other shortcomings, the level of use of manual labor in organizations of the ministry is 48.2 percent, including 34.2 percent for purely manual operations.

Large reserves are available in the work being performed by scientific-technical organizations. Further improvements are required in the economic mechanism for controlling scientific-technical progress in the branch based upon cost accounting procedures.

In the draft "Basic Directions for the Economic and Social Development of the USSR During the 1986-1990 Period and for the Period Up To the Year 2000," specific planned tasks are defined for achieving the programmed goals of the CPSU. Following a national discussion of them, they will be examined and approved during the 27th CPSU Congress. The "Basic Directions" call for grandiose tasks associated with the placing in operation of new enterprises and the modernization and technical re-equipping of existing enterprises. This imposes a special responsibility upon those organizations of the ministry which are participating in operations at construction projects of all branches of industry.

During the 12th Five-Year Plan and in 1986, the principal projects requiring special attention will be blast furnace No. 5 of the Cherepovets Metallurgical Plant, the Astrakhan Gas Complex, a dynamo steel shop at the Novolipetsk Metallurgical Plant, projects of the PO Rostselmash associated with the production of the Don-1500 combine, the continuation of construction of the Oskolskiy Electro-Metallurgical Combine, the Far East and Uzbek metallurgical plants, the Volga Pipe Plant and the Sayansk Aluminum Plant, the production of polyethylene at the Sumgait PO Orgsintez and ethylene at the Sumgait Synthetic Rubber Plant, KATEK projects, approximately 200 capabilities at enterprises of agricultural machine building, livestock husbandry and fodder production, a large number of installations associated with the Food Program.

Compared to 1985, the plans for 1990 call for an increase of 16.2 percent in the volume of contractual work performed by the ministry's organizations and 13 percent in the volume of industrial goods produced. The plans call for labor productivity in construction to be raised by 18 percent and in industry by 13 percent. This will ensure the entire increase in the volumes of contractual work and industrial production. During the years of the 12th Five-Year Plan, the plans call for the production of approximately 11 million tons of construction structures, almost 27 million square meters of light and approximately 126,000 tons of aluminum structures and also more than 5,500 sectional buildings (modules), that is, an increase in production, by 1990 and compared to 1983, of 12.6, 51.2, 47.5 and 28.1 percent respectively. Compared to the plan for 1985, the volume of consumer goods to be produced must be increased by a factor of 4.4 and the production volume for these goods raised to 70 million rubles in 1990.

The November (1985) Plenum of the CPSU Central Committee approved for the most part and the 4th Session of the USSR Supreme Soviet of the 11th Convocation confirmed the plan for the economic and social development of the USSR and the budget for 1986, which ensure further growth in the economy of the entire country and each union republic. The plans call for the implementation of a program for intensifying and raising production efficiency based upon accelerated scientific-technical progress, a strengthening of state planning discipline and improvements in the system for planning and controlling the national economy. Priority importance is being attached to the modernization of industrial enterprises.

As pointed out in the draft "Basic Directions," the solving of these tasks requires that capital construction be raised to a new level from the standpoint of quality. Radical improvements are needed in construction production, the

quality of work must be improved and the cost of operations lowered. Progressive methods must be introduced more actively into operations, improvements must be realized in the organization of construction and the effectiveness of planning solutions raised. Over the next decade, the periods for the erection and modernization of installations must be reduced by a factor of 1.5-2.

The successful solving of these tasks will be promoted by the carrying out of the decree of the CPSU Central Committee and the USSR Council of Ministers entitled "On Further Development of Industrialization and Improvements in Labor Productivity in Capital Construction." This decree calls for a vast and comprehensive program for renovating the branch's logistical base and arming the builders and assemblers with the resources required for highly productive and high quality work.

The decree obligates the machine building ministries to convert over, commencing in 1987, to complete deliveries of equipment in large-scale units of high plant readiness. USSR Minmontazhspestroy /Ministry of Installation and Special Construction/ has been tasked with carrying out a complex of measures aimed at developing and distributing the production of complete buildings made from light metal structures, planning the technology, and developing effective methods for transporting and installing these buildings. The plans call for a considerable expansion in the production of new materials and in the creation of new machines and mechanisms.

This party-governmental document is of tremendous importance. In order to carry out the tasks set forth in it, a great amount of work must be performed by the ministry's organizations within a brief period of time. A list of projects must be established, the construction of which must include complete technological lines and the use of units, including those assembled at production bases of the ministry's organizations. Joint orders of USSR Minmontazhspestroy and client ministries for the planning of projects involving the use of units should be prepared with the machine building ministries concerning deliveries of complete technological equipment on a unit basis. Technical requirements (assembly) must be developed for deliveries of complete-technological lines on a unit basis and also for the planning of projects involving the use of units.

In the interest of ensuring fulfillment of the tasks for the 12th Five-Year Plan and 1986 and also for implementation of the above-mentioned decree of the CPSU Central Committee and the USSR Council of Ministers, the ministry developed the "Basic Directions for Raising the Technical Level of Installation and Special Construction Work During the 1986-1990 Period Within the USSR Minmontazhspestroy system" and 12 branch scientific-technical programs. The ministry also participates in carrying out the tasks called for in the all-union scientific-technical programs. Order No. 326 of 23 September 1985 sets forth the schedules and executive agents for implementation of the decree. The "Basic Directions" and the branch programs call for further development and further improvements in the production technology for installation and special construction work and the creation and an expansion in the use of new and progressive mechanisms, instruments, materials and structures. A number of tasks are aimed at lowering the consumption of materials and particularly metal, fuel and electric power. Each organization and each enterprise of the ministry

must have appropriate plans at their disposal. The immediate task consists of completing the preparation of these plans and ensuring that they are made available to all executive agents within a brief period of time.

Based upon these documents, a five-year plan has been developed for raising the technical level of installation and special construction work, the implementation of which will make it possible to achieve 80 percent of the assigned growth in labor productivity in construction and a reduction in the volume of manual labor.

The need for further raising the level of industrialization of installation and special construction work requires the development and strengthening of the production base. The ministry's organizations are carrying out constant work in this regard. Over the past five-year period, new capabilities have been placed in operation for the production of metal structures, including light-weight items, and also for the production of heat-insulation materials and a number of others. At the same time, there have been instances of insufficient use being made of the resources allocated for industrial construction. This applies primarily to Glavteplomontazh /Main Administration of Heat Engineering and Heat Insulation/, the all-union production associations of Soyuzstal-konstruktsiya and Soyuzspetslegkonstruktsiya. The leaders of subunits of these organizations are not imposing proper requirements upon the general contractors and they are not ensuring fulfillment by them of the construction plans for industrial enterprises.

During the 12th Five-Year Plan, the capital investments allocated to the ministry must be utilized completely. Special attention must be given to the technical modernization of existing enterprises, with 42 percent of the overall capital investments being allocated for this purpose. An increase in the production of structures and products must be ensured by the completion of construction and the technical modernization of plants at Molodechno, Kansk, Kamenets-Podolsk, Pervouralsk, Perm, Ufa and Volgograd and in Prikaspiyskiy Rayon and in the Far East. One of the most important tasks of the leaders of the ministry's organizations and enterprises is that of carrying out the plans for internal capital construction.

Constant attention must be focused on the further mechanization of production operations, on lowering the level of manual labor and on improving the utilization of mechanisms. During the 12th Five-Year Plan, an increase is called for in the production of installation mechanisms and instruments and in the creation of new models of cranes, including those with a lifting capability of up to 250 tons and equipped with tower-crane equipment. For carrying out work concerned with the modernization of enterprises, the plans call for the development of cranes with a lifting capability of up to 100 tons, telescopic crane arms and hydraulic drives. For the 12th Five-Year Plan, a program has been prepared for the development of repair production operations, one which calls for a considerable increase in the volume of repair operations and improvements in the quality of such work.

A large reserve for improving the organization of labor and raising its productivity is that of the brigade contract. The need for maximum development of the brigade contract was noted in the draft "Basic Directions." Purposeful work is being carried out in the ministry's organizations aimed at expanding

the introduction of the brigade contract into operations. In 1981, this method was employed for carrying out 50 percent of the overall volume of construction-installation work and in 1985 -- approximately 60 percent. The method of continuous flow brigade contract was especially effective; it was employed for the construction of a number of large complexes. In the introduction of the brigade contract, the best results were achieved by installation organizations in Belorussia, Uzbekistan, the Ukraine, Glavspetspromstroy /Main Administration for Special Types of Construction and Installation/, Glavsantekhmontazh /Main Administration for Ventilation and Sanitary Engineering/, Glavpromventilyatsiya, Glavstalkonstruktsiya /Main Administration for the Manufacture and Installation of Steel and Complex Reinforced Concrete Structures/ and Glavelektromontazh /Main Administration for Planning and Performing of Electrical Installation Work/.

In the interest of further improving the effectiveness of the brigade contract, consolidated brigades must be created which will be capable of carrying out technologically the final stage of construction, the brigades of all of the ministry's subunits which participate in the construction of a project must simultaneously be converted over to cost accounting procedures and greater harmony must be achieved in the work carried out with general contracting organizations. This will promote an expansion in the introduction of the continuous flow brigade contract system.

An improvement in labor productivity is directly associated with the creation of healthy and safe conditions for workers. The solution for the problem of lowering production occupational injuries must be carried out in three principal directions: maximum introduction of the system for controlling the protection of labor in all subunits, unconditional fulfillment, by all organizations and enterprises, of the comprehensive plan for improving labor conditions and safety and sanitary measures and fulfillment of the plan for the social development of labor collectives.

On the whole, the comprehensive plan for improving labor conditions and safety during the 11th Five-Year Plan was fulfilled and this made it possible to improve the conditions for production operations and in 1985 to lower the number of serious occupational injuries occurring during production operations. However, a number of organizations did not ensure fulfillment of their plans and failed to lower the number of occupational injuries.

The ministry's board and the presidium of the central committee of the branch trade union approved the comprehensive plan for improving labor conditions and safety and the sanitary measures for the 12th Five-Year Plan. Its unconditional fulfillment will ensure the maintenance of high and prolonged working efficiency among the installation personnel and will promote an improvement in the productivity of their labor.

In the draft "Basic Directions," mention was made of the need "for first of all activating a principal and inexhaustible reserve consisting of the human factor and thus achieving a high level of organizational ability, discipline and order." Many years of operational experience irrefutably testifies to the fact that the successful solving of this task is possible only on the basis of Lenin's principles concerned with the selection of personnel based upon political, business-like and moral qualities.

More than 200,000 specialists possessing higher or secondary specialized educations are working within the ministry's system. The overwhelming majority of them are carrying out their assignments and justifying the trust placed in them. In the future, every attempt must be made to ensure that all sectors of work are headed by politically mature and knowledgeable leaders, individuals who possess high moral qualities, who are respected in their collectives and who are capable of successfully carrying out the party's policies.

The responses to evidence of violations or abuses of official position must be swift and clear, connivance in these matters cannot be tolerated and trust and respect for personnel must be inseparably combined with exactingness towards them. Constant attention must be given to the task of ensuring leadership continuity. Constant concern must be displayed so as to ensure that young and promising workers are able to acquire the required hardening and experience in all sectors by working alongside tested older personnel. This must be promoted both by organizational means and by a system for improving the skills of personnel. During the 12th Five-Year Plan, annually and with a break from production operations, more than 6,000 leading workers and specialists attached to the ministry will improve their skills.

A great amount of attention must constantly be given to training and to ensuring that the organizations and enterprises are supplied with skilled workers. The system of professional and technical education serves as the principal source for providing the organizations and enterprises with young workers. During the years of the 11th Five-Year Plan alone, the professional and technical institutes supplied the ministry's organizations and enterprises with more than 112,000 skilled workers. In order to improve the quality of training for workers at professional and technical institutes, the ministry plans to carry out the modernization and expansion of these institutes prior to the year 2000. The ministry's organizations and enterprises must constantly provide the professional and technical institutes with assistance in equipping the classrooms and workshops and in the selection of teachers. Special attention must be given to carrying out the annual plans for selecting students into the professional and technical institutes, assigning the graduates of these institutes to production operations and ensuring their return to an organization following service in the Army and the development of tutorship.

Increases in the housing fund and children's institutes and an expansion in subsidiary farms promote the retention of personnel and improvements in their working and living conditions. For the 12th Five-Year Plan, the plans call for the placing in operation of more than 880,000 square meters of living space in apartment buildings and kindergartens for more than 4,300 children. In November 1985, the ministry's board approved measures for the further development of subsidiary farms during the 1986-1990 period. The plans call for a considerable increase in the production of agricultural products, including meat, milk and vegetables. An expansion is also taking place in the volume of paid services; by 1990, it will have increased twofold compared to 1985. All of these problems are reflected in the plans for the social development of collectives, the carrying out of which must be under the constant control of the administration and the party, trade union and komsomol organizations.

The skilled collective of many thousands of workers attached to the ministry's organizations has accumulated a great amount of experience in successfully

carrying out the complicated and responsible tasks associated with fulfillment of the national economic plan based upon extensive use of scientific and engineering achievements. The party and government have placed a high value upon the work being performed by workers attached to the ministry's organizations and enterprises. During the 11th Five-Year Plan, the title of Hero of Socialist Labor was conferred upon 13 individuals, USSR Lenin Prize Laureate -- 5 individuals and laureate for such prizes as -- USSR State, USSR Council of Ministers, Leninist Komsomol and Soviet trade unions -- 292 workers. Decorations and medals of the Soviet Union were awarded to 7,482 individuals.

The "Basic Directions for the Economic and Social Development of the USSR for the 1986-1990 Period and for the Period Up To the Year 2000," the draft of which was published in the press for national discussion, constitutes a grandiose program for further strengthening the economic and defensive might of our homeland and for achieving a new level (from the standpoint of quality) in the well-being of our Soviet people. The highest forum of our Leninist party -- the 27th Congress of the Communist Party of the Soviet Union -- will summarize the results of great creative labor and the creative efforts of the Soviet people during the years of the 11th Five-Year Plan and it will approve new plans for communist construction over the next 15 years.

The Soviet people warmly support the work carried out by the General Secretary of the CPSU Central Committee Comrade M.S. Gorbachev, during his meeting in Geneva with President Reagan of the United States of America. It was an important element in our long-term efforts aimed at achieving the peace needed for accelerating the socio-economic development of our society.

Our installation personnel are devoting all of their resources, knowledge and experience in the interest of participating actively and creatively in carrying out the historic decisions of the forthcoming congress of the CPSU. It is a matter of honor for each worker attached to the USSR Minmontazhspestroy to make his own personal contribution towards solving successfully the tasks confronting the ministry.

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CSO: 1821/132

UDC 666.94:658.5:301.085

DEPUTY MINISTER DESCRIBES PROBLEMS, TASK FOR CEMENT INDUSTRY

Leningrad TSEMENT in Russian No 1, Jan 86 pp 1-4

[Article by V.I. Kushchidi, USSR deputy minister of the construction materials industry: "Work of the Cement Industry in the 11th Five-Year Plan Period and Industry Tasks for 1986-1990"]

[Text] In a report by CPSU Central Committee General Secretary M.S. Gorbachev at the Central Committee meeting on 11 June 1985 on questions relating to speeding scientific and technical progress as one of the tasks for the 12th Five-Year Plan period, it was pointed out that we must assume higher limits with lower expenditures.

Just as all the Soviet people, cement industry workers are actively maintaining the party's course in shifting the economy onto the track of intensive development. Cement workers, too, must make their contribution to solving the problem of socioeconomic upgrading of the country presented by the April and October 1985 plenums of the CPSU Central Committee and at the CPSU Central Committee's meeting on questions relating to speeding scientific and technical progress (June 1985).

In order to move forward, it is necessary to sum up some results of the cement industry's work in the 11th Five-Year Plan period, during the years of which the industry achieved further growth.

During the four and one half years of this five-year plan period the enterprises of the USSR Minstroyaterialov [Ministry of the Construction Materials Industry] produced 7.3 million tons more cement than during the same period of the 10th Five-Year Plan period, including 5.3 million tons more by the dry method of production.

Eight million nine hundred thousand tons more clinker were produced. As compared with 1980, the mean hourly productivity of rotary kilns was increased from 33.1 to 35.2 tons per hour, and the specific consumption of standard fuel for firing clinker was reduced by 3 kg/t, and the medium grade of cement was improved by 1.2 kg/cm².

Fixed industrial production assets (taking into account those taken out of service) were increased by 476 million rubles. Eight new production lines

were put into service with a total cement capacity of about 6 million tons per year, 3.8 million tons of which by four dry-method production lines. The remaining capacities put into service were wet-method production lines. The operation of about 50 new tube mills was begun, and as many as 200 obsolete and worn-out grinding units were replaced.

In the 11th Five-Year Plan period about 40 rotary kilns were modernized, with a change in type, at the Sebyakovskiy, Voskresenskiy, Belgorod and Kramatorsk cement plants, at the Brotseny Cement and Corrugated Asbestos Board Combine, and at other enterprises. Furthermore, the linear-motion roller bearings of rotary kilns were replaced by antifriction bearings, which has reduced the consumption of electric power per kiln by almost 600,000 kWh per year.

An effective solution which has made it possible to improve operating reliability and to lower the cost of lining and repairs is the use of welded-in straining rings at some plants.

Rolled armoring lining has become widely used for raw material and cement mills (more than 200 sets of rolled-metal components have been introduced), as well as efficient heat transfer and burner units for rotary kilns.

At the Lipetsk and Navoiyskiy cement plants, ground limestone is fed to the clinkering section, as the result of which in the 5 x 75 m kiln at the Lipetsk plant the specific consumption of fuel for firing clinker has been reduced by 5 kg/t, hourly productivity has been increased, and the durability of the lining has been increased by a factor of 1.5.

The production of high-grade cements has been mastered, utilizing superflexibilizers based on lignosulfonates, as well as the production of sulfate-resistant portland blast-furnace slag cement, for the development and introduction of which a group of specialists of the industry was awarded the USSR Council of Ministers Prize for 1983.

Work was also done on reducing the moisture content of slurry, increasing the utilization of ash and slag, lowering the temperature of flue gases and clinker, improving the durability of linings, and protection of the environment, work was begun on the reconstruction and opening of new quarries, and six ASUTP's [plant technical management automation systems] were introduced.

The collectives of the industry's enterprises broadly launched a socialist competition for a fitting welcome for the 60th Anniversary of the USSR, the 25th Anniversary of the Movement for a Communist Attitude Toward Labor, the 40th Anniversary of the Soviet People's Victory in the Great Patriotic War, and the 50th Anniversary of the Stakhanovite Movement.

In the forefront of the socialist competition were the collectives of the Akmyantsementas PO [Production Association]; the Zhigulevsk Construction Materials Combine; the Sebyakovskiy, Ulyanovo, Vorkuta, Lipetsk, Bezmein, Topkinskiy, Teplozersk and Rybnitsa cement plants; and the Spassktsement and Yakutpromstroyaterialy PO's.

In 1985 six million tons more cement were produced than in 1980.

In spite of the growth in the production of cement in the 11th Five-Year Plan period, enterprises of the USSR Ministry of Materials produced about seven million tons of cement less than required by the plan.

In the first half of 1985 (mainly in the first quarter) 48 enterprises did not fulfill the plan for binder production and produced 2.7 million tons less cement than required. The greatest lagging behind was committed by the Karagandatsement PO (the plan for the first half of the year was fulfilled by 77.2 percent and it lagged behind by 341,600 tons of binder), the Novorostsment Combine--219,400 tons, the Mordovtsement PO--145,400 tons, the Slantsevskiy Cement Plant (the plan was fulfilled by 72.2 percent and 123,600 tons less cement than required were delivered), and the Olshanskiy Cement Plant (the plan was fulfilled by 83.5 percent and 106,000 tons less binder than required were delivered).

There were objective causes which complicated the work of some enterprises, especially in 1982 and in the first quarter of 1985, when limitations in the supply of electric power, an insufficient supply of fuel oil, coal and gas, as well as a reduction in gas pressure, resulted in over-the-plan downtime of equipment. There were interruptions in the supplying of railway cars for the shipment of cement and transport of gypsum, pyrite cinders, tripoli and other kinds of additives; the quality of raw material deteriorated because of the exhaustion of quarries.

However, basically the unsatisfactory work of the industry's enterprises was due to internal factors, namely:

Underutilization of the design capacities of high-productivity wet-method kilns 185 m long, as well as of dry-production-method kilns measuring 7.0/6.4 x 95 m.

Above-plan equipment downtime and excessive downtime for repairs contrary to the norms.

Lack of raw material.

The mean hourly productivity of kilns measuring 5 x 185 m was increased from 68.8 t/h in 1980 to 69.5 t/h in 1984, which corresponds to 98.9-percent mastery of design productivity, and the utilization factor for these units increased, respectively, from 0.753 to 0.785. Their design capacity was utilized in 1984 for the industry on average only by 86.3 percent, and in the first half of 1985 by 85.5 percent, and in 1984 by 43.7 percent at the Checheno-Ingushkiy Cement Plant, by 74.8 percent at the Mordovtsement PO, and by 81.9 percent at the Starooskolskiy Cement Plant.

Eight out of 59 kiln units operated in 1984, and in the first half of 1985 10 out of 60 kilns measuring 5.0 x 185 m (four of them at the Akmyantsementas PO and two at the Amvrosiyevka Cement Combine) operated at their design capacity and higher at enterprises of the USSR Ministry of Materials.

Kilns measuring 5.0 x 185 m in 1984 yielded about three million tons less clinker than called for by their design capacity, and more than one million tons less in 1985 because of low hourly productivity and a low utilization factor. In 1984 kiln units had 24,762 machine-hours of above-plan downtime.

The actual downtime per kiln equaled: in 1981--78 24-hour periods, in 1982--89.3, in 1983--84.7, in 1984--78.7, and in the first half of 1985--36.2, more than 26 percent of it due to overhauls, more than 37 percent to routine repairs, and about 15 percent for lining replacement.

Design capacities were not mastered in 5 out of 32 kilns 170 m long. Mastery of design capacity at cement plants in 1984 equaled 77 percent at the Chernorechenskiy and 73.4 percent at the Karadagskiy. Four hundred thousand tons less clinker than required were delivered.

The design capacity was mastered in only one kiln out of six dry-production-method units measuring 7.0/6.4 x 95 m. The principal reason for non-mastery of these capacities was the frequent stopping of kiln units for replacement of the lining and above-plan downtime. For example, at the Karagandatsement PO in 1984 two kilns were down 1638 machine-hours because of lining work, 3495 hours for repairs while hot, and 504 hours because of a lack of raw material. Hence their low indicators: The utilization factor for kiln units equaled 0.42, and productivity 100.5 t/h.

The mean hourly productivity of six kilns measuring 7.0/6.4 x 95 m reached the design productivity in the first half of 1985, and their utilization factor equaled 0.62 against a plan factor of 0.80 and a design of 0.90.

In the first half of 1985, in the 4.5 x 80 m rotary kiln having a decarbonizer at the Krivoy Rog Cement and Mining Combine, the mean hourly productivity, as compared with the same period in 1984, increased from 107.9 to 114.4 tons, and the utilization factor was reduced from 0.762 to 0.706.

An analysis of the operation of the entire inventory of kilns testifies to the existence of considerable above-plan downtime; data on the reasons for it are presented in the table. Of the total above-plan downtime, 54 percent constituted downtime resulting from a lack of raw material, electric power and other physical resources, and 46 percent because of accidents and malfunctioning of equipment and excessive downtime for repairs and repair of the lining while hot.

The following had the greatest amount of above-plan downtime for kilns from 1981 through 1985: Cement plants: the Kantskiy--18,800 h, the Chernorechenskiy--12,000 h, the Kuznetsk--9700 h, the Krivoy Rog--6800 h, and the Bekabad--6700 h; and also the Karagandatsement--10,670 h--and Mordovtsement--9900 h--production associations.

The following had the greatest amount of above-plan downtime for cement mills: the Novorostsement Combine--44,500 h; the Karagandatsement PO--31,700 h; and the Kuznetsk--24,100 h, Karadagskiy--24,000 h, and Kantskiy--21,000 h, plants.

<u>Year</u>	<u>Above-plan downtime for kiln units, h</u>	<u>Including</u>	
		<u>Because of lack of raw material, fuel and electric power, h</u>	<u>Because of malfunction- ing of equipment, h</u>
1981	89,488	46,707	42,781
1982	99,872	57,080	42,792
1983	70,897	32,431	38,466
1984	77,605	39,906	37,699
First half of 1985	32,839	25,222	7,617
Totals	370,701	201,346	169,355

The Akmyantcementas PO, as well as the Zdolbunov, Lipetsk, Ulyanovo, Vorkuta and Sebyakovskiy cement plants, worked practically without above-plan downtime or had a very small amount of it.

The principal reason for parts and assemblies of equipment failing, as before, has been the violation of equipment operation rules, because of which more than half of all accidents took place.

Enterprises continue to systematically violate the schedules for the time intervals for shutting equipment down for repairs, regulated by the "Scheduled Preventive Maintenance System." Instrumentation, as well as signaling and interlock systems, are lacking at many plants. Lubrication facilities have been neglected, as a result of which the lubrication cycle is being violated. Only by this is it possible to explain the fact that 50 percent of grinding unit accidents took place because of melting out of the shells of the journal bearings and bearings of the speed reducers of the main drives of mills.

Another reason for the above-plan downtime of key production equipment is the poor quality of spare parts (about 20 percent of all accidents took place for this reason).

The plants of the Glavremmekh [not further identified] of the USSR Ministry of Construction Materials and Minstroydormash [Ministry of Construction, Road and Municipal Machine Building] must improve the quality and reliability of spare parts produced, primarily, the bottoms of the frames and armor plates of mills, the supporting rollers of rotary kilns, the grate bars of coolers, the components of flight conveyors, and other parts.

At many plants there are not enough repairmen and work places have not been outfitted with attending personnel. There is a high turnover of personnel at individual enterprises, which has also resulted in an increase in the number of accidents.

In terms of the status as of 1 January 1985, the fixed assets of the cement industry amount to 4.372 million rubles, and the deterioration of these

assets equaled 48.8 percent. The active portion of assets is aging especially rapidly.

Of the industry's 370 rotary kilns, 20 percent have been operating for more than 30 years--this equipment has become obsolete and worn out and requires an increased consumption of fuel and high annual costs for repairs.

Of the 1019 grinding units 62 percent have been operating longer than the depreciation period; therefore, their more active replacement is required.

About 500 million rubles were spent in 1984 for performing all kinds of repairs on fixed production assets and for depreciation relating to their restoration.

Thus, fixed assets are in need of radical updating, but utilization of the industry's funds earmarked for capital investment in 1981-1984 equaled only 90.8 percent.

The situation is even worse with the entry into service of new fixed assets and capacities for the production of cement--77.3 percent and 83.0 percent, respectively.

Over four years of the five-year plan period, of the industry's earmarked funds 58.7 million rubles were not used.

The plan for capital investment and construction and installation work was fulfilled especially unsatisfactorily in 1981-1985 at the Savinskiy, Slantsy, Nevyansk, Novoiyskiy and Rezina cement plants, at the Novorostsement Combine, and at the Bryansktssement and Karagandatsement PO's.

The experience of leading enterprises testifies to available potential for fulfilling the goals confronting the industry in the 12th Five-Year Plan period: The production of cement for the USSR Ministry of Materials must equal 131 million tons in 1990, and the consumption of standard fuel must be reduced from the 221.5 to 210-to-208 kg/t class.

Glavtssement [not further identified] and the ministries of Union republics in conjunction with the industry's institutes and Orgproyekttssement [All-Union State Special Bureau for Performance of Startup and Adjustment and Planning and Design Work in the Cement Industry] must assist plants which are lagging behind, in providing in a very short time rotary kilns with slurry (raw powder) of the prescribed composition in an amount necessary for the stable operation of enterprises. For this the following are required:

To build additional warehouses for raw material with containers enabling necessary reserves of it and the interruption-free operation of equipment, as well as the necessary number and capacity of slurry reservoirs (or silos) for ensuring reserves of prepared slurry (or raw powder) for not less than three 24-hour periods of operation of kilns.

To increase the capacities of the crushing departments of some cement plants (e.g., the Chernorechenskiy, Magnitogorsk and others).

To redesign systems for adjusting and blending slurry (raw powder) for the purpose of achieving the prescribed stable composition.

It is necessary to further improve, further outfit and debug the system for monitoring and controlling the process of preparing raw powder, as well as to ensure achieving a high-quality composition for it, at the Novokaragandinskiy and Navoiyskiy cement plants, without which the high-efficiency operation of large-capacity kiln units cannot be achieved.

A radical solution is necessary to the problem of improving the durability of the lining of kilns measuring 7.0/6.4 x 95 m, including arranging for the production of special high-quality refractories in a quantity sufficient for enterprises. Industry institutes must develop a reliable design for the lining of the shafts, roofs and covers of cyclone separators, as well as for the inlet and outlet ends of kilns.

Glavtsement, the Kazakh SSR Minstroy materialov and enterprise managers must concentrate their efforts on eliminating bottlenecks at the Checheno-Ingushkiy, Slantsy, Kuznetsk and Katav-Ivanovsk cement plants, the Yashkino Combine and the Karagandatsement PO, which constantly do not fulfill their plan quotas.

Unfortunately, it is necessary to mention the existence of shortcomings in the designs of the new high-capacity lines for the dry method of production. Giprotsement [All-Union State Scientific Research and Planning Institute of the Cement Industry] and Yuzhgiprotsement [State All-Union Institute of Planning of Cement Plants and Scientific Research Work] must now cease the dissemination of errors in the designs of lines being constructed, discovered in the process of startup and debugging work in mastery of the first large-capacity production lines for the dry method of production.

In spite of interruptions in the delivery of railway cars, it is impossible not to mention their unsatisfactory utilization at some enterprises. Excessive downtime of railway cars is especially high at the Yashkino Cement and Corrugated Asbestos Board Combine--8.45 h, at the Nevyansk and Katav-Ivanovsk plants--5.43 h each, and at the Bryansktssement PO--3.59 h. Enterprises of Glavtsement alone paid the railroads in seven months of 1985 875,000 rubles in fines.

It is necessary to develop without delay facilities for loading and unloading materials, and to construct warming rooms for thawing frozen fuel, raw material and additives, as well as motor vehicle garages and railway car dumpers, and to equip the access roads of enterprises with STsB [signaling, interlocking and block system] equipment and communications equipment.

For the purpose of improving organization and reducing labor intensiveness, as well as for lowering the cost of unloading bulk freight, it is necessary in the very near future to expand warehouse space on the basis of doubled

mean 24-hour arrival; to eliminate to the maximum the reloading of materials and their intraplant transport by means of railroad and motor vehicle transportation; with the arrival of 500,000 tons and more of freight per year to provide for the construction of car dumpers; to provide for the utilization of receiving bins as a standby facility for unloading of materials; and to furnish receiving facilities with devices for moving cars up and taking them away, drilling and loosening machines, devices and facilities for scraping cars clean and cleaning material residues from their undercarriages, and for opening and closing the hatches of gondola cars.

Design institutes must develop and the main administration must examine and improve the following: standard schemes for road development and solutions for warehousing facilities and for the mechanization of loading and unloading work, which will become an important condition for improving the economic efficiency of the operation of the industry's enterprises.

In accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers titled "On the Further Development of Industrialization and Improvement of Labor Productivity in Capital Construction," the development of cement enterprises must be accomplished on account of their retooling and reconstruction and the extensive introduction of progressive production processes and equipment.

The cement industry is confronted in the 12th Five-Year Plan period, in addition to the priority task of ensuring by 1990 the total utilization of available production capacities, with great problems relating to radical intensification of the production of cement, i.e.:

Raising the percentage of the dry method of producing cement to 22 percent (versus 15 percent expected in 1985).

Reducing to 208 kg the consumption of standard fuel for firing one ton of clinker (versus the actually expected consumption in 1985 of 221.5 kg).

Increasing labor productivity by 11.8 percent per worker.

A 2.9-percent lowering of expenditures per ruble of commodity product (as compared with the plan for 1985) and an increase in profit of by more than 100 million rubles.

Expansion of the production of high-grade cement (grades 500 and higher) to 28 million tons, an increase in the output of decorative cement to 1 million tons, and of self-stressing cement to 350,000 tons.

An increase to 45 percent (versus 36 percent in 1985) in the percentage of products of the highest quality category in terms of total production.

Ensuring up to seven million tons of the production of cement by the dry method in production lines with decarbonizing reactors.

The utilization of up to 2.3 million tons of the ash and ash-and-slag waste of thermoelectric power plants of the USSR Minenergo [Ministry of Power and Electrification].

The control figures for the increase in the volume of the production of cement and clinker and for improving production efficiency designated for the 12th Five-Year Plan period are two to four times higher than those actually achieved in the 11th Five-Year Plan period.

For example, the increase in the production of cement in the 12th Five-Year Plan period will equal 8.3 percent of the 1985 level (in the 11th Five-Year Plan period this figure was 4.5 percent of the 1980 level), and the saving of standard fuel must equal 1.46 million tons versus a saving in the 11th Five-Year Plan period of 350,000 tons.

For the first time in the industry, the entire increase in production volume will be accomplished just on account of an increase in labor productivity, without an increase in the number of industrial production personnel and without an increase in the amount of fuel for firing clinker (more than one half million tons of standard fuel must be saved in addition for the industry as a whole).

It was emphasized at the April 1985 Plenum of the CPSU Central Committee that scientific and technical progress and a growth in production efficiency are inseparable from an improvement in product quality, which is economically equivalent to an increase in its quantity without involving additional production capacities and capital investment.

Improvement of the quality of cement directly reduces materials intensiveness in construction. This problem is of the highest importance, and cement workers are obligated in the 12th Five-Year Plan period to ensure stability in the quality of their products, and to restore the confidence of builders in the guaranteed grade of binder. For this purpose it is necessary to increase production process discipline sharply and to ensure constantly at all production process stages the strict observance of production process standards.

It is necessary to reduce the moisture content and improve the grinding fineness of slurry (powder), to eliminate the feeding of unadjusted slurry (powder) to a kiln or working on raw material passing through, to fire clinker well, to improve the operation of coolers, and to reduce considerably the temperature of clinker and cement, to reduce the normal density of grout and not to permit false setting, to improve the degree of dispersion of cement, and to have a not less than 10-percent activity margin for the guaranteed grade of binder.

All cement workers must constantly remember that the high quality of products produced by them is the most accurate and general indicator of scientific and technical progress in the industry, and of the level of labor and labor discipline at enterprises.

For the purpose of ensuring fulfillment by the industry of the plan figures of the 12th Five-Year Plan period, it is necessary to carry out a set of organization and technical measures for a substantial increase in the production of cement by the dry method and by other energy-saving processes, for replacing fixed industrial production assets and improving production efficiency, for improving working conditions, for the fuller satisfaction of the demand of the construction industry for cement of the required selection and quality, and for creating a strong basis for further development of the cement industry.

The plan for retooling and further development of the industry based on energy-saving processes for the 12th Five-Year Plan period calls for the following:

The conversion of enterprises from the wet to the dry method by the construction at existing plants of high-capacity production lines with the subsequent removal from service or modernization of obsolete equipment, as well as by the redesigning of rotary kilns while supplying them with cyclone heat exchangers and decarbonizers;

Conversion of the production of cement at enterprises operating with the utilization of raw material with an elevated moisture content to the combined method while keeping the wet method of processing raw material (by the mechanical dewatering of slurry by utilizing press-filters and the thorough dewatering of slurry by using commercial lignosulfonates);

The expansion and reconstruction of existing enterprises operating according to the dry method with the introduction of modern high-productivity equipment;

Updating the obsolete inventory of rotary kilns, grinding units and other production and ancillary equipment at plants operating according to the wet method, and their modernization or replacement by more modern and highly productive equipment without increasing the consumption of fuel and energy resources ;

The removal from service of worn-out and obsolete wet-method production lines, as well as of shaft furnaces, extension of the service life of which is economically unfeasible ;

Unprecedented development of the industry's raw materials base and the reconstruction of existing and the construction of new quarries with the introduction of high-productivity mining equipment and a cyclic flow process;

The broad introduction of progressive production processes and large-capacity equipment based on integrated mechanization and automation and the employment of microprocessor equipment with every possible saving of labor, physical and energy resources;

The integrated mechanization of load handling work and the introduction of units furnished with car dumpers, warming facilities and bag forming machines;

Expansion of the utilization of secondary resources, primarily of ash and slag from thermoelectric power plants, and the implementation of environmental protection measures;

The unprecedented development of the production of effective kinds of high-strength, fast-hardening, paving, sulfate-resistant, decorative, self-stressing and other cements;

Systematic distribution of the production of effective kinds of cement, primarily of high-grade and special, for the purpose of shortening the radius for transporting them;

It has been planned to earmark for these purposes in 1986-1990 24.71 percent of the total limit of capital investment assigned for development of the industry, or 2.5 times more than for the period 1981-1985.

A total of 55 percent of the capital investment limit has been earmarked for retooling and reconstruction of enterprises.

In addition, the retooling plan calls for enlistment of the following for the purpose of modernizing the equipment: overhauling resources, and non-centralized capital investments for enterprises (the production development fund, Gosbank's credit for the introduction of new equipment and arranging for the production of consumer goods, and other kinds of investment), as well as depreciation fund money.

For the purpose of ensuring fulfillment of the program of the 12th Five-Year Plan period, Glavtsement and the construction materials ministries of Union republics must carry out the extensive retraining of personnel, especially for enterprises and plants to be reconstructed for the dry method of production, and must improve industry scientific and technical information and take all measures to hold onto workers and engineering and technical personnel by expanding the construction of housing and facilities for social and cultural and personal purposes.

The deed of honor of the collectives of enterprises and industry institutes is to ensure fulfillment of the tasks assigned to the cement industry by the 27th CPSU Congress.

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CONCRETE PLANTS IMPROVE SOLIDITY, ECONOMIZE ON CEMENT

Moscow TRANSPORTNOYE STROITELSTVO in Russian No 3, Mar 86 p 33

[Unattributed article: "At the Plants of Glavstroyprom: A Statistical Method for Controlling the Solidity of Concrete"]

[Text] At the majority of the ZhBK [Reinforced Concrete Structures] plants of Glavstroyprom [Main Administration of the Construction Industry], statistical control of the solidity of concrete has been introduced in accordance with GOST [State Standard] 18105.0-18105.1-80 and the Methodological Instructions. Based on its results, plant laboratories are adjusting the composition of the concrete, reducing the consumption of cement. According to the accounting information from the trusts, the new methodology resulted in savings of 1,000 tons in 1984.

With the introduction of GOST 18105.0-18105.2-80 in 1982, "Concrete; Rules for Controlling Solidity," the requirement for reducing the solidity of concrete in comparison with the standard and the corresponding reduction in the consumption of cement or improving other technical-economic indicators while achieving a high degree of uniformity in the concrete, has become mandatory.

Responsibility for the quality of the concrete and for the proper consumption of cement has been increased.

In introducing the State Standard the greatest difficulties arose as the workers in the plant laboratories were attempting to master the methodology of the mathematical calculations and certain of their terms.

For this reason, the SKB [Special Design Office] of Glavstroyprom developed Methodological Instructions for Statistical Control of Solidity of Concrete (published in 1982). They have been delivered to the users, and joint seminars and practical lessons have been conducted.

In order to simplify the mastery of the State Standard at this level, it was recommended that the production-process batch be considered the daily production of concrete under two-shift operations, taking the results of each shift as for a series. The coefficient for variation among batches (V_{ss} —coefficient for variation in solidity of concrete among various batches in accordance with GOST 18105.1-8, Appendix 1) was determined by

graphic method¹, which provided a visual representation of the results, necessary for regulating the solidity of the concrete. The basis for making decisions on increasing or decreasing the consumption of cement in comparison with the nominal composition are the recommendations contained in Appendix 1 to GOST 18105.1-80. The necessary reserve or the lack of solidity of the concrete were determined in accordance with the normalized solidity of the concrete and its average level ($R = R_n$), which must be greater than zero with a high degree of uniformity of the concrete.

Subsequently, in order to guarantee 95-percent assurance in deriving batch solidity (average solidity of concrete in a batch is R , according to GOST 18105.0-80) no lower than that required, the coefficient which takes into consideration inter-batch variations in solidity (K_{mn}) has been somewhat increased in comparison with the values cited in the appendix. It was recommended to determine solidity, corresponding to the average level (R_n), according to the formula

$$R_p = R_n \left(1 + \frac{2}{100} V_{mn} \right).$$

The possible reserve in solidity was determined according to the difference between the calculated and the actual average solidity of the cement ($R_p - R_n$).

The procedure for apportioning technological complexes while observing the limitations explained in point 4.3 of GOST 18105.0-80 has presented special difficulties.

This work was carried out at each enterprise separately, in consideration of the specific conditions and the previously-derived information on the uniformity of the concrete. The methodological instructions provide an example of statistical control by constructing monthly graphs for changes in solidity and the batch coefficients of the variation, by determining the basic statistical parameters--the coefficients of the batch and interbatch variations and the indicators of the solidity of the concrete--the required (R_p) and the average level (R_n). After comparing them, the decision is made on the possibility of lowering the average level of solidity (as compared with the normalized) and, correspondingly, reducing the consumption of cement.

Checks have shown that a significant portion of the savings in cement is being written off by the plants to cover losses from underloading of rail cars committed by the cement plants, losses in unloading and transportation of the cement, and not observing the batch standards established by the laboratory--which takes place, as a rule, when the cement is dispensed by hopper with the aid of forced air. Such systems do not ensure precise dispensing (± 1 kg), and they should be replaced with screw-conveyers or rotating drum dispensers. Analysis of the results of statistical control of cement solidity has shown that the uniformity of the cement is increased significantly with the latter dispensers. For example at the Tuchkovo ZhBK plant, where they utilize rotating drum dispensers, the average value of the batch coefficient of variation amounts to $V_n = 5.2\%$, with a range of from 3.3 to 12.7 percent for 1984 at all technological complexes.

¹ Handbook on Statistical Methods for Control and Analysis of Solidity of Concrete, Taking Uniformity into Consideration. Moscow, STROYIZDAT, 1974.

Changes in the composition of the cement also lead to increased lack of uniformity in the concrete. Thus, at the Mochishchensk ZhBK plant, as a result of using Chernorechensk cement, containing from 15-45 percent cinders (cinder-portland cement), the average value of the coefficient of variation amounted to 13.3 percent with a range of from 7-15 percent.

Instability in temperature and humidity conditions in the process of reinforced concrete construction and lack of uniformity in the indicators for quality of the additives for the concrete also lead to significantly increasing the lack of uniformity in the solidity of the concrete.

With coefficients of variation which exceed 11-12 percent, urgent measures are required to eliminate violations of the technology and in a number of cases increasing the consumption of cement in order to produce concrete with the required solidity.

At Glavstroyprom ZhBK plants (in 1984) the average value of the coefficient of variation of solidity of concrete after low-temperature steaming (released or transmitted) amounted to 7.5 percent of solidity of the planned increase ($V_s=6\%$). Consequently, at the majority of the enterprises the concrete is sufficiently uniform and there is a reserve for economizing on cement.

Further work on introduction of a statistical method for control is being developed in the direction of making the associated calculations easier.

Employees at the Special Design Office of Glavstroyprom and TsNIIS [All-Union Scientific Research Institute of Transportation Construction] have developed Recommendations on the Technology of Automated Statistical Control of the Solidity of Concrete. They contain programs for carrying out calculations on Elektronika BZ-34, MK-54, and MK-56² microcalculators and are intended for statistical processing of indicators for solidity of concrete derived from tests with control models or through use of stable analysis methods.

The recommendations also include programs for construction and statistical analysis of the function of "indirect characteristics - solidity of cement", utilized with stable testing methods.

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² The programs were worked out by N.M. Bogin, cand. tech. sci., chief designer at the Glavstroyprom Special Design Office.

PRODUCTION, APPLICATION OF GYPSUM MATERIALS

Moscow STROITELNYYE MATERIALY in Russian No 2, Feb 86 p 8

[Article by L.S. Elkind, engineer, under the heading: "Questions of Increasing the Industrialization and Quality of Construction: Progressive Gypsum Materials for Building Projects"]

[Excerpts] In contemporary construction a great deal of attention is being devoted to binding agents and to designs made from gypsum. The very use of these materials is an important reserve for reducing the amount of resources used and for increasing the technical level of construction. For example, producing a ton of gypsum binding agents requires four times less fuel than for manufacturing a ton of cement. Proportional capital investments for production are lower by a factor of two than in the cement industry. The high adaptability for industrial production of gypsum permits sharply increasing labor productivity. And the metal content of machinery at gypsum plants is lower than for cement plants by a factor of three.

With the use of articles and designs made from gypsum the length of the construction period is reduced, work quality is improved, the fire-resistance of buildings and structures is increased, and beauty is added to everyday life.

The basic directions for the use of gypsum materials today are: as a direct substitute for cement in construction of buildings with few stories; for installing poured self-leveling foundations under the floors, which permits doing without wood and cement, and increases labor productivity by almost a factor of five; and the manufacture of dry plaster mixes. With their use a single worker is able to cover 60 square meters per shift, which is several times greater than when working with composite mortars; and, gypsum materials are used for production of decorative materials. Gypsum is very suitable for this--it is practical and inexpensive; it is suitable for sanitary engineering components; it can be used for manufacturing gypsum wallboard and gypsum-fibre sheets for installation of partitions and ceilings; and it can be used for production of designs with tongue and groove contours, which are very promising for construction.

Progressive experience in working in the directions indicated was displayed in an exhibit by a number of scientific-research and planning organizations, construction ministries and departments.

In the 12th Five Year Plan the USSR Ministry of the Construction Industry plans to significantly increase output of gypsum binding materials and articles made from them. Commencing this year it is planned to produce dry gypsum mixtures for plaster work, and gypsum-fibre panels, and by 1990, gypsum particle boards. The organizations of the ministry are acquainting us with fragments of gypsum-board partitions for piece-by-piece assembly on a metal framework, which were developed by TsNIIEP [Central Scientific Research and Planning Institute for Standard and Experimental Planning] for trade and everyday establishments and for tourist complexes. Their use speeds up construction, eliminates wet processes at the building site, and significantly reduces labor expenditures.

The USSR Ministry of Heavy Construction put on display the products of the Chelyabinsk gypsum-fibre panel plant. When erecting housing and public buildings (with the normal conditions of moisture) the panels are installed as partitions, and as coverings for suspended ceilings. The plant has a capacity of 6,000,000 square meters of panels per year. Complex designs for partitions with a metal framework and sheathing are made from gypsum fibre and gypsum wallboard panels. Under a project of the Kiev ZNIIEP [Zonal Scientific Research and Planning Institute for Standard and Experimental Planning], they have been introduced at building projects of the UkSSR Ministry of Housing and Municipal Services. Such decorations are factory-produced and do not require wood or metal braces, which reduces labor costs by 10-15 percent.

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BRIEFS

NEW COLD-WEATHER CONCRETE MIXERS--The first lot of "SV-145" concrete mixers designed for the north has been produced at the Slavyarsk Construction Machine Plant in Donetsk Oblast. The productivity of this machine is 45 cubic meters per hour of high-grade mortar and concrete. The unit consists of modules and therefore it is easy and simple to dismantle it, move it to another location and assemble it just as quickly. It can operate automatically. The designers were also concerned about operating personnel. In the operator's cab there is an electric heater and air conditioner. The first examples of this machine were sent to builders in Arkhangelsk Oblast. Northerners will receive a total of 100 of these units in a year from the Slavyansk machine builders. [By Ye. Mzhen, Kramatorsk] [Text] [Moscow STROITELNAYA GAZETA in Russian 17 Jan 86 p 3] 8831

ASH INSTEAD OF CEMENT--Recently the builders of the Sayano-Shushenskaya GES saved about 3500 tons of cement and in the process in no way lowered concreting quality. The fact is that now construction of the dam is nearing completion and at its higher elevations the water pressure is much lower than down below. There is no need for superstrong concrete and the excessive consumption of cement. Specialists of the All-Union Scientific Research Institute of Hydraulic Engineering imeni B. Vedeneyev in cooperation with the central laboratory of Krasnoyarskgesstroy [Krasnoyarsk Hydroelectric Power Station Construction Administration] developed a new technology for preparing concrete. It calls for replacement of part of the cement with ordinary ash, which also made it possible to gain a saving. In the 12th Five-Year Plan period the Sayanskiy hydroelectric power station builders intend to do 97.5 percent of the concrete work by using ash. [By V. Trokhin, Sayanogorsk] [Text] [Moscow STROITELNAYA GAZETA in Russian 24 Jan 86 p 3] 8831

RIGID ROCK WOOL PANELS--The Rostov-na-Donu Rigid Rock Wool Board Plant of the USSR Mintyazhstroy [Ministry of Construction of Heavy Industry Enterprises] has mastered the production of safety panels for industrial buildings. The plant's specialists and workers together developed the design and equipment and retooled two production lines which will produce up to 120,000 square meters of panels per year. The rock wool heat-retaining jacket will impart to the panels greater strength and fire resistance than polyurethane foam. The plant will ship the first batch of the new product to builders by the opening of the 27th CPSU Congress. [By M. Martynov, Rostov-na-Donu] [Text] [Moscow STROITELNAYA GAZETA in Russian 9 Feb 86 p 3] 8831

NEW ECONOMICAL DECORATIVE MATERIAL 'DEKORIT'--Between 1981 and 1985 the Stroyindustriya Combine produced more than 70,000 square meters of panels which look like natural marble. They have been used for wall coverings at the interior of Vnukovo Airport, at the assembly hall of the Institute of Oceanology of the USSR Academy of Sciences, in the trade departments of company stores, in cafes and in many other building projects. Panels of "Dekorit" are ready to use as they come from the plant, and have been certified at the highest category of quality. Their production cost is 15.5 rubles per square meter. The design and technological office at Mosorgstroymaterialy [probably, Moscow Construction Materials Organization] and the Stroyindustriya Combine are continually searching for improvements in the technology of manufacturing such panels. At the present time a new manufacturing line is being set up for production of this efficient decorative material, with a capacity of 100,000 square meters of articles per year. Upon a suggestion by the section for the construction industry, designs, and construction materials of the scientific-technical council of RSFSR Gosstroy, different variations have been developed for grouping the machinery for production of dekorit, with capacities of 15,000; 30,000; 50,000; and 100,000 square meters per year--which will permit each region of the RSFSR to organize industrial production of the new decorative material in accordance with its own needs, availability of production area, and physical capabilities. [Excerpts] Moscow NA STROYKAKH ROSSII in Russian 2 Feb 86, p 3] [COPYRIGHT: Izdatelstvo "Sovetskaya Rossiya," "Na stroykakh Rossii", 1986.] 9006

USE OF PHOSPHORIC GYPSUM IN CONSTRUCTION--Increasing the production volume of mineral fertilizer, which has a great role in agricultural economics, leads to the formation of large amounts of phosphoric gypsum. Depending on the raw material and the temperature at which the basic technological process takes place, the amount of phosphoric gypsum formed per ton of finished product amounts to 4.5-5 tons in terms of dry phosphoric gypsum, and at the enterprises of the Voskresensk Minudobreniya [Mineral Fertilizer] Production Association, more than 25,000,000 tons has accumulated already. The basic mass of the phosphoric gypsum is stored in dumps and only 7-8 percent of it is utilized in agriculture and in the construction materials industry. The cost of storing the phosphoric gypsum is about five rubles per ton, and the cost of operating the dumping grounds is one ruble per ton. In addition, productive land is taken out of use, the area of which amounts to from 10 to 100 hectares, depending on the means of transport. One effective directions for utilizing phosphoric gypsum is reprocessing it into high-strength gypsum binding material, which may be successfully used along with natural gypsum for production of construction components and designs, and in a number of cases can substitute for cement, which is in short supply. [By O. Kikava, director of TsNIIL Glavmosoblstroy, candidate of technical sciences; Ye. Firskin, chief of the department of new construction materials; N. Shchekina, sector chief; N. Borisova, senior engineer] [Excerpt] [Moscow, NA STROYKAKH ROSSII in Russian 2 Feb 86 p 9] [COPYRIGHT: Izdatelstvo "Sovetskaya Rossiya," "Na stroykakh Rossii", 1986.] 9006

MEASURES TO DEVELOP PROGRESSIVE BUILDING MATERIALS--The RSFSR Ministry of the Construction Materials Industry is conducting certain work on developing production of progressive materials and articles for major construction projects; in the last five-year plan the production of such materials was increased by a factor of 1.5. Branch enterprises have increased production of ceramic tiles with a wide range of colors, temperature-resistant ornamented glass, built-up rubberoid and gypsum articles, wall units of honeycomb concrete composition, hollow bricks and brick facing. At the same time there are still serious shortcomings in this work, as was noted at the committee meeting. For example, production volume of effective roofing paper and waterproofing materials is expanding slowly. Work is not going well on developing production of effective insulating materials, mineral-like perforated mats, and others. As before, the ceramic brick industry is lagging. The proportion of hollow bricks in the total volume of brick production for construction amounts to only 27 percent in all, and production of brick facing about 6 percent (as opposed to the required 10-12 percent). And the quality of the bricks is improving slowly. Work is exceptionally unsatisfactory on further developing production of gypsum binding materials and articles made from them, and on organizing production of dry mixes and other kinds of progressive building materials. The committee considered it necessary that the RSFSR Ministry of the Construction Materials Industry should stipulate in its draft plan for the 12th Five Year Plan significant expansion of production of effective construction materials and articles, and also to take up production of new kinds of products, bearing in mind supporting to the maximum the requirements of construction workers for these materials and articles; measures should also be taken to significantly expand, by 1990, output of basic building materials and articles of the highest category of quality, and above all wallboard, thermal-insulation, soft roofing and insulating materials. [Excerpt] [Moscow, NA STROYKAKH ROSSII in Russian 2 Feb 86 p 61] [COPYRIGHT: Izdatelstvo "Sovetskaya Rossiya", "Na stroykakh Rossii", 1986.] 9006

GLASS PIPE ONE-PIECE CONNECTORS--The mass production of shaped connecting parts for glass pipelines has taken shape at the Gomel Glass Plant imeni Lomonosov. Previously it was necessary to weld together several lengths to construct branches from a straight pipe. This takes a long time and is not very reliable. Now the assembly process has been simplified considerably, which is of great national-economic importance, since large-diameter glass pipes are becoming ever more extensively used in the country's chemical, petroleum, medicine and food industries. [By V. Perzashkevich, Gomel] [Text] [Moscow STROITELNAYA GAZETA in Russian 2 Feb 86 p 3] 8831

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